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ABSTRACT

A five-step process of selecting instructional strategies and media is provided in workbook form. Nine instructional strategies--four in the cognitive domain, three in the psychomotor domain, and two in the affective domain--are included, with two sample media prescriptions for each. A special flow chart table of contents shows the route through the five steps, defined as (1) write an objective; (2) determine the domain; (3) select strategy; (4) write strategy prescription; and (5) select appropriate media. Illustrative examples are provided for each strategy. Appendixes include suggestions for the use of instructional media, and an instructional media resources inventory. (SK)

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SELECTING INSTRUCTIONAL STRATEGIES AND MEDIA: A PLACE TO BEGIN

BY

M. DAVID MERRILL and R. IRWIN GOODMAN

Brigham Young University

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Media Specialist Program

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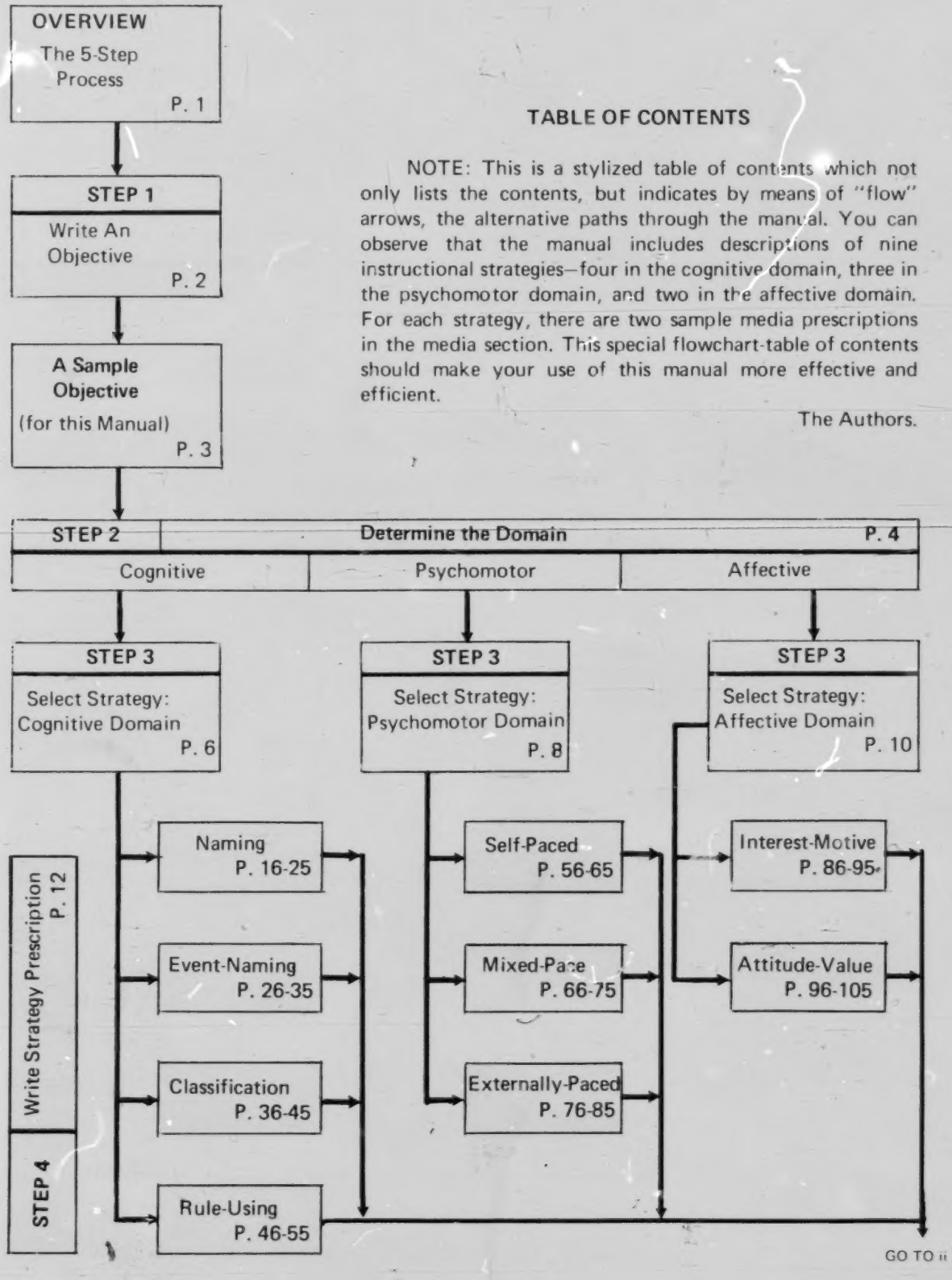
M.D.M.
R.I.G.

15 January 1972

TABLE OF CONTENTS

NOTE: This is a stylized table of contents which not only lists the contents, but indicates by means of "flow" arrows, the alternative paths through the manual. You can observe that the manual includes descriptions of nine instructional strategies—four in the cognitive domain, three in the psychomotor domain, and two in the affective domain. For each strategy, there are two sample media prescriptions in the media section. This special flowchart-table of contents should make your use of this manual more effective and efficient.

The Authors.



CONTENTS CONTINUED FROM "i"

STEP 5 — **Select Appropriate Media** — P. 109

For Evaluation	For Practice	For Presentation
Media for Evaluation P. 110-111	Media for Student Practice P. 112-113	Media for Presentation P. 114-115

Suggestion for the Use of

Objects	Still-Pictures	Motion-Pictures	Audio Media	Written Word & Symbols
P. 116	P. 118	P. 122	P. 124	P. 126
Also P. 174	Also P. 176	Also P. 181	Also P. 184	Also P. 188

Sample Strategy & Media Prescriptions

Cognitive Domain	Psychomotor Domain	Affective Domain
Naming	**Self-Paced**	**Interest & Motivation**
Music P. 130	Handwriting P. 146	Biology P. 158
Biology P. 132	Typing P. 148	Music P. 160
Event-Naming	**Mixed-Paced**	**Attitude & Value**
History P. 134	Athletics P. 150	Pollution P. 162
Cooking P. 136	Bicycling P. 152	Respect P. 164
Classification	**Externally-Paced**	
Science P. 138	Athletics P. 154	
Athletics P. 140	Athletics P. 156	
Rule Using		
Science P. 142		
Literature P. 144		

WORKSHEETS
Instructional Strategies & Media Prescription Sheets (Blank) P. 166-171

A FINAL WORD P. 173

Appendices

1. Suggestions for the Use of Instructional Media P. 174-188
2. Instructional Media Resources Inventory P. 192-196

SELECTING INSTRUCTION STRATEGIES AND MEDIA: A PLACE TO BEGIN

INTRODUCTION:

This manual will serve as your guide to the five-step process of selecting instructional strategies and media. You should already know how to write objectives in the ABCD format (Audience, Behavior, Conditions, and Degree). You probably already have a number of objectives ready to work on. When you have completed this phase of the Instructional Development Institute, you will have the opportunity to implement the instructional strategy and media selection decisions that you make by actually constructing and trying out instructional materials.

The instructional and media strategies outlined in this manual are based on systematic instructional design procedures being used in various places around the country at all levels of education. Both experience and research indicate that different instructional strategies are appropriate for different sets of instructional requirements. When the most appropriate strategy is used for a particular instructional situation, the efficiency of both the teacher and the students can be greatly increased. In this manual, nine instructional strategies are provided to meet the unique requirements of the cognitive, psychomotor, and affective domains.

This manual should make a useful reference source long after you have completed the Instructional Development Institute. Half of the manual is made up of illustrative examples. The **procedures** for the selection and use of instructional strategies and media are described on the **left** hand pages and the illustrative **examples** are on the **right**. Sample strategy and media prescriptions are given for eighteen different behavioral objectives, two for each of the instructional strategies presented in the manual.

On the following page is a brief overview of the five steps of the instructional strategy and media selection process. After you have looked it over, turn the page to Step One and you're on your way.

THE FIVE-STEP PROCESS OF SELECTING INSTRUCTIONAL STRATEGIES AND MEDIA

Up to this point in the instructional development process, you have identified your instructional problems, analyzed the educational setting, organized management procedures, and identified both terminal and enabling objectives. You are now ready to undertake the five-step process of selecting instructional strategies and media.

STEP ONE

WRITE AN OBJECTIVE

Your first step in the process is to write a statement of the instructional outcome including a description of your AUDIENCE, the BEHAVIOR that they are to perform, the CONDITIONS under which the behavior will be observed, and the DEGREE, or level, of acceptable performance.

SUGGESTIONS FOR THIS STEP BEGIN ON P. 2

STEP TWO

DETERMINE THE APPROPRIATE DOMAIN FOR THE OBJECTIVE

At this point, you will classify your objective as being either cognitive, psychomotor, or affective.

SUGGESTIONS FOR THIS STEP BEGIN ON P. 4

STEP THREE

SELECT APPROPRIATE INSTRUCTIONAL STRATEGY

Each of the three domains are broken down into two or more instructional strategies. After determining the domain, your task will be to select the most appropriate instructional strategy for your objective.

SUGGESTIONS FOR THIS STEP BEGIN ON P. 6

STEP FOUR

WRITE STRATEGY PRESCRIPTION

Objective written, domain determined, and instructional strategy selected, you will now write a prescription describing the specific learning activities that are to take place.

SUGGESTIONS FOR THIS STEP BEGIN ON P. 12

STEP FIVE

WRITE MEDIA PRESCRIPTION

Based on your instructional strategy prescription, you will now consider the media alternatives for presenting the instruction, providing for practice, and evaluating student performance. A prescription including the use of specific media will then be prepared.

SUGGESTIONS FOR THIS STEP BEGIN ON P. 109

STEP ONE	WRITE AN OBJECTIVE

THE IMPORTANCE OF OBJECTIVES

The identification of objectives is an extremely vital part of the overall instructional design process. As you work through this manual, you will discover just how important carefully stated objectives are in making instruction strategy and media decisions. There is no denying the difficulty of writing clear, concise, complete, and meaningful objectives. However, without the information that a well constructed objective contains, it is extremely hard to make effective instructional design decisions.

You will remember that objectives are made up of four elements – A, B, C, and D.*

THE A, B, C, D FORMAT FOR OBJECTIVES

A = AUDIENCE	**Who** is to be doing the learning? **Who** are the students working on the objective?
B = BEHAVIOR	A **verb** and **object** which describe an observable action the student will be doing as a result of the learning experience.
C = CONDITIONS	Limitations or restrictions placed on the student, or materials, or aids given the student, **when he is being evaluated** to determine whether or not the objective had been attained.
D = DEGREE	The acceptable performance level at which a student proves he has mastered the objective.

NOW, WRITE AN OBJECTIVE

Before you go on to Step Two in the instructional strategy and media selection process, you will need to write or select one or more objectives, either enabling or terminal. Since terminal objectives are usually more complex because they include one or more enabling objectives, you may decide to go through the process with one enabling objective.

GO TO PAGE 3

*This material is taken from the ABCD's of Objectives, a self-instructional package used in Function 4, State II of the Instructional Development Institute.

A SAMPLE OBJECTIVE

The objective for **this manual** can be stated as follows:

Audience: Public school teachers, administrators, and curriculum specialists,

Behavior: Will classify each enabling objective according to the behavior domain involved and the type of content involved;

will design appropriate presentation, practice and evaluation procedures which are maximally effective for promoting a given type of behavior; and

will efficiently utilize a variety of media to implement each of these presentation, practice, and evaluation procedures.

Conditions: Instructional decisions will be based on terminal objective and enabling objectives prepared in the ABCD format.

Degree: Performance will be judged adequate when an actual lesson designed for classroom use, has been demonstrated to improve student performance.

STEP 1. Write Your Own Objective:

Audience:

Behavior:

Conditions:

Degree:

GO TO PAGE 4

STEP TWO	DETERMINE APPROPRIATE DOMAIN FOR OBJECTIVE

You should examine your objective and determine whether it is primarily Cognitive, Psychomotor, or Affective. Any objective contains all three of these components to some degree. You job is to determine which of these components you wish to emphasize. The following guidelines should help you decide:

COGNITIVE: The cognitive domain deals with what a student knows, understands, or comprehends. If your objective requires him to remember or use facts or ideas, then your objective is in the cognitive domain.

(SEE EXAMPLE ON FACING PAGE.)

Write the domain of **your** objective in the space at the bottom of P. 5. If it is COGNITIVE, go to P. 6

PSYCHOMOTOR: The psychomotor domain is concerned with how a student moves or controls his body. If you objective requires him to manipulate an object, to use some tool to produce a product or to perform a routine which requires him to move parts or all of his body in specified ways, then your objective is in the psychomotor domain.

(SEE EXAMPLE ON FACING PAGE.)

Write the domain of **your** objective in the space at the bottom of P. 5. If is it PSYCHOMOTOR, go to P. 8.

AFFECTIVE: The affective domain is concerned with how a student feels. If your objective is for him to show increased interest or motivation in a subject or some activity, or if you desire some change in attitude or values, then your objective is in the affective domain.

(SEE EXAMPLE ON FACING PAGE.)

Write the domain of your objective in the space at the bottom of P. 5. If it is AFFECTIVE, go to P. 10.

SAMPLE OBJECTIVES

(All three domains)

1. **The Objective:**

   A. The junior high school science student
   B. will label clouds as being cirrus, stratus, cumulus, or nimbus,
   C. when shown actual clouds or pictures of them.
   D. He should be 100 percent correct on all of the easy examples and at least 50 percent correct on the difficult examples.

2. The Domain is: **Cognitive**, since being able to identify different kinds of clouds requires the student to understand or comprehend the categories indicated.

1. **The Objective:**

   A. Third grade students
   B. will write
   C. the letters d, b, g, and p using cursive style handwriting.
   D. Each letter will be well-formed and created with a single smooth stroke.

2. The Domain is: **Psychomotor**, since being able to write cursive style requires the student to manipulate an object, a pencil or pen, to produce a product, the written letters.

1. **The Objective:**

   A. High school biology students
   B. will demonstrate an increased interest in biology by coming to class early.
   C. The teacher will have the room open so they may come in early, but will not provide any special awards for students so doing.
   D. The objective will be considered accomplished if an average of one-third of the students come early throughout the year and 80 percent come early at least once.

2. The Domain is: **Affective**, since it suggests that a student will come to **feel** more positive about biology, and because increased interest and not knowledge of the subject is the behavior involved.

STEP 2. Classify the Domain of the Objective you wrote on Page 3

The Domain is. _____

Why is it? _____

_____

STEP THREE	SELECT APPROPRIATE INSTRUCTIONAL STRATEGY COGNITIVE DOMAIN

There are four instructional strategies for objectives in the cognitive domain, each appropriate for a different type of cognitive objective. Identify the strategy appropriate to **your** objective, and then go to P. 12.

NAMING STRATEGY. Naming is another word for memorizing the parts of an object or for memorizing a list of symbols and their names. Your objective requires a naming strategy if the student is asked to:

recall a symbol;
name an object or its parts;
name functions or characteristics of an object or its parts.

SEE SAMPLE NAMING OBJECTIVE ON THE FACING PAGE.

EVENT NAMING STRATEGY. Event naming involves remembering the details of an event, the episodes in a story, or the steps in a process. Your objective requires an event naming strategy if the student is required to:

recall the details of an event;
sequence the details of an event or the steps of a process.

SEE SAMPLE EVENT NAMING OBJECTIVE ON THE FACING PAGE.

CLASSIFICATION STRATEGY. Classification is required whenever a student is asked to demonstrate his understanding of a word by identifying an example. Your objective requires a classification strategy if the student is required to:

define a new word or term;
identify symbols, objects or events as being members of a particular category or group.

SEE SAMPLE CLASSIFICATION OBJECTIVE ON THE FACING PAGE.

RULE USING STRATEGY. Rule using is required whenever a student is asked to solve a problem which requires two or more steps to arrive at the solution. Your objective requires a rule using strategy if the student is required to:

use one or more rules to solve a problem;
use one or more rules to produce a creative product.

SEE SAMPLE RULE USING OBJECTIVE ON THE FACING PAGE.

GO TO PAGE 12

SAMPLE COGNITIVE OBJECTIVES

A NAMING OBJECTIVE

The 7th grade student (audience) will name (behavior) the lines and spaces of the treble staff in musical notation when notes are presented in any order (conditions). Satisfactory performance is the ability to name a note in two seconds or less (degree).

The behavior requires the student to name a set of symbols.

Note that the symbols are identical or almost so from one instance to the next. He must learn at some point, however, that different kinds of notes (quarter, half, etc.) change only their duration, not their name.

AN EVENT NAMING OBJECTIVE

Given the name of an event which helped lead to the start of the Civil War (condition), the eighth grade student (audience) will recognize or list (behavior) the significant facts associated with that event. Acceptable performance is remembering 75% of the significant facts for 80% of the events (degree).

This objective requires the student to remember specific events and some of the details of each event. The behavior specified is listing or recognizing which requires memory.

The objective also requires the student to remember the sequence of these events.

A CLASSIFICATION OBJECTIVE

The junior high school science student (audience), when shown actual cloud formations or pictures of them (conditions), will label (behavior) clouds as being cirrus, stratus, cumulus, or nimbus. He should be 100 percent correct on all easy examples and at least 50 percent correct on the difficult or more ambiguous examples (degree).

Here, we are teaching the student to recognize four different classes. Groups of concepts are often taught together.

This objective requires the student to classify objects (clouds) into one of four categories. Obviously, identifying an object as a cloud or not a cloud is also a concept task, but assumedly one which these students already have learned.

The thing being classified is clouds or representations of clouds.

A RULE USING OBJECTIVE

High school physics students (audience) will use Ohm's law to determine either the voltage, current, or resistance (behavior) in a DC circuit when given two of the values (conditions). Both the answer and the sequence used in solving the problem must be correct (degree).

This is a complex objective requiring several rules. The outcome is a solution which can be judged right or wrong.

The rules involved include: Arithmetic operations
Ohm's Law: Voltage = current x resistance

STEP THREE	SELECT APPROPRIATE INSTRUCTIONAL STRATEGY PSYCHOMOTOR DOMAIN

There are three instructional strategies for objectives in the psychomotor domain, each appropriate for a different type of psychomotor objective. Identify the strategy appropriate for **your** objective, and then go to P. 12.

SELF-PACED STRATEGY. If, prior to initiating a given body movement, both the person and the object to be manipulated are at rest so that the learner can respond when he is ready, then a self-paced psychomotor strategy is appropriate. Your objective requires this strategy if the student is required to:

move his body or part of his body when he is ready and at his own speed;
contact, manipulate, control, or move a stationary object.

SEE SAMPLE SELF-PACED OBJECTIVE ON THE FACING PAGE.

MIXED-PACED STRATEGY. If, prior to initiating a given body movement, either the body or the object to be manipulated are already in motion, then a mixed-paced psychomotor strategy is appropriate. Your objective requires this strategy if the student is required to:

interact with a stationary object while his body is in motion;
interact with a moving object while his body is set or in a state of preparation.

SEE SAMPLE MIXED-PACED OBJECTIVE ON THE FACING PAGE.

EXTERNALLY-PACED STRATEGY. If, prior to initiating a given body movement, both the body and the object to be manipulated are in motion, then an externally-paced psychomotor strategy is appropriate. Your objective requires this strategy if the student is required to:

execute a response or series of movements while he and an object are in motion.

SEE SAMPLE EXTERNALLY-PACED OBJECTIVE ON THE FACING PAGE.

GO TO PAGE 12

SAMPLE PSYCHOMOTOR OBJECTIVES

A SELF-PACED OBJECTIVE

Using the correct hand position (condition), typing class students (audience) will type (behavior) the letters ASDF and JKL on a standard typewriter keyboard (conditions). The student will be ready to proceed to the next objective when he can type all or some of these letters in any specified order without errors at a minimum rate of three letters per second (degree).

The task involves learning to operate a previously stationary object, the typewriter.

The student initiates the task when he is ready. While a criterion limit is specified, the machine does not regulate the student, he does it himself, making this a self-paced task.

A MIXED-PACED OBJECTIVE

Early grade school children (audience) will hit (behavior) a softball with a ball bat (conditions). Acceptable performance is hitting one out of three slow pitched softballs thrown in the strike zone (degree).

The softball is in motion while the student is set, ready to hit it at the critical moment; hence, this is a mixed-paced task.

AN EXTERNALLY-PACED OBJECTIVE

High school football receivers (audience) will catch (behavior) an over-the-shoulder pass while running downfield (conditions). They will catch one out of two such passes when not closely defended (degree).

The behavior requires the receiver to be running while a ball is moving toward him through the air. He must adjust his motion so he can meet the ball at the key moment without stopping.

STEP THREE	SELECT APPROPRIATE INSTRUCTIONAL STRATEGY AFFECTIVE DOMAIN

There are two instructional strategies for objectives in the affective domain, each appropriate for a different type of affective objective. Identify the strategy appropriate for **your** objective, and then go to P. 12.

INTEREST OR MOTIVATION STRATEGY. When a student likes or desires something or some activity, he engages in behavior which enables him to obtain the object or participate in the activity. Engaging in such seeking behaviors or in behaviors which make a given activity last longer are evidences of interest or motivation. Your objective requires an interest or motivation strategy if the student is to demonstrate:

increased persistence in working at some task;
more frequent volunteering to participate in some task.

SEE SAMPLE INTEREST OR MOTIVATION OBJECTIVE ON THE FACING PAGE.

ATTITUDE OR VALUE STRATEGY. When a student possesses a given attitude or value, he expresses himself by verbal statements consistent with his feeling, by saying he would act consistent with his feeling, and by acting consistent with his feeling. Your objective requires an attitude or value strategy if the student is to:

verbalize a new or modified value position;
voluntarily choose situations or activities which are consistent with the new or modified value.

SEE SAMPLE ATTITUDE OR VALUE OBJECTIVE ON THE FACING PAGE.

GO TO PAGE 12

SAMPLE AFFECTIVE OBJECTIVES

AN INTEREST OR MOTIVATION OBJECTIVE

Junior High School Algebra students (audience) will become more motivated to work algebra problems. They will show this increased motivation by completing (behavior) more of the "fun options" suggested at the end of each unit. These options consist of games and puzzles using the principles taught in the unit. Students are not assigned these options, but can find out how well they did by requesting to see the teacher's answer key (conditions). If the average number of students working the fun options reaches 50%, the objective will be considered accomplished (degree).

Persistence by voluntarily engaging in more problem solving is used to infer increased motivation.

When fun options are assigned, they should not be counted toward the criterion or in determining the base line data.

AN ATTITUDE OR VALUE OBJECTIVE

Sixth grade students (audience) will come to value an unpolluted environment. Their concern for pollution will be measured by the way they discard papers, wrappers, etc. (behavior). On an outing where they are given individually wrapped candy and do not know that their paper discard behavior is being observed (conditions), the number of wrappers thrown on the ground will be significantly less than during a baseline outing (degree).

Paper discard behavior provides a good measure of attitude toward the environment and pollution.

The degree is an average for a group. Individual behavior is more difficult to observe.

If someone in authority says, "Remember to put papers in the trash," your measure will be somewhat biased. Make it a free choice situation.

STEP FOUR	WRITE A STRATEGY PRESCRIPTION

Each of the nine instructional strategies described in this manual consists of three phases: presentation, practice, and evaluation. A strategy prescription involves making specific decisions as to the type of procedure appropriate for a given strategy and specific content for each of these phases. When planning an instructional strategy, it is usually desirable to plan the evaluation prior to determining practice and presentation procedures. For this reason, in this manual these three phases are discussed in the reverse order from how they are presented. The phases are described below:

EVALUATION. Each strategy describes the acts and conditions necessary for adequate measurement of the behavior described by the objective. Because an objective deals with terminal behavior, it is always desirable to determine your testing procedure prior to designing the practice and presentation procedures even though this is the last step in instruction. The evaluation strategy prescription describes the format for the test, the way the test will be administered and scored, and any special procedures which should be used.

(SEE EXAMPLE ON FACING PAGE.)

PRACTICE. Each strategy describes the drills, exercises, and problems necessary to assist the student in acquiring the specified behavior. Practice always involves the student's participating and receiving feedback as to the adequacy of his performance. Most practice comprises presenting material to the student and then requiring a response. The practice prescription describes each of the various stages and kinds of practice necessary for the student.

(SEE EXAMPLE ON FACING PAGE.)

PRESENTATION. The first steps in any learning sequence are to apprise the student of our expectations, define the nature of the task, and explain why he should learn it. The presentation prescription describes this orientation.

(SEE EXAMPLE ON FACING PAGE.)

Study the full-page example on the facing page. You will notice that it is in the form of the worksheets on pages 166-171. You will complete a similar worksheet for your objective.

GO TO P. 15

STRATEGIES FOR A SAMPLE OBJECTIVE

1. **Write Your Objective**

   Audience: *Junior high school science students*

   Behavior: *will label clouds as being cirrus, stratus, cumulus or nimbus*

   Conditions: *when shown actual clouds or pictures of them.*

   Degree: *100% correct on all easy examples and at least 50% correct on difficult or ambigious examples.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *classification*

4. Write Your Strategy Prescription:

Comments

Even though we write the evaluation prescription first, the complete strategy prescription appears on the page in the order that will be used for instruction.

The presentation orients the student by telling him the objective, illustrating the task, and explaining why it is useful to be able to identify clouds.

The practice procedures present a variety of illustrations while asking the student to classify them. He is given feedback as to the adequacy of his response together with information which helps him see relevant characteristics.

The evaluation consists of a test which requires the student to identify pictures of clouds he has not previously seen. The criteria of acceptable performance are described.

Presentation

Objective: Tell the student he is going to learn to identify different types of clouds.

Show a set of four pictures, one of each type.

Name each type. Show a set of four line drawings, one of each type, emphasizing relevant characteristics. List the characteristics of each type.

Explain how cloud types help with weather prediction.

Practice

Practice	*Display*	*Feedback*	*Display*
Picture	*Picture . .*	*Drawing*	*Drawing . . .*

A set of twenty pictures, each of a different kind of cloud. A corresponding set of line drawings emphasizing the relevant characteristics.

Response: Appropriate cloud name.

Directions: Name each type of cloud. Tell me why the name is appropriate by pointing out distinctive characteristics. After your response, I'll show you a drawing to help you see the distinctive features.

Evaluation

Display: Pictures of clouds (1-2-3 each type)

Picture	*Picture*	*Picture*	*Picture*
1	*2*	*3*	*4*

Not used during class.

Response: Write name of cloud type.

Directions: You will be shown some pictures of cloud formation. Write the type of cloud pictures opposite the number on your answer sheet.

Criteria: The test should contain at least 12 pictures, four of the items are very difficult to discriminate. The student should get all easy items and at least two of the hard items.

STRATEGY INDEX

The following pages present recommendations for preparing presentation, practice, and evaluation prescriptions for each of the nine strategies previously identified. You should determine the appropriate strategy for your objective and turn to one of the following sections.

COGNITIVE STRATEGIES

Naming	Go to pages 16-25
Event Naming	Go to pages 26-35
Classification	Go to pages 36-45
Rule Using	Go to pages 46-55

PSYCHOMOTOR STRATEGIES

Self-paced	Go to pages 56-65
Mixed-paced	Go to pages 66-75
Externally-paced	Go to pages 76-85

AFFECTIVE STRATEGIES

Interest or Motivation	Go to pages 86-95
Attitude or Value	Go to pages 95-105

STEP FOUR	WRITE A STRATEGY PRESCRIPTION Cognitive Domain, A Naming Strategy

A simplified checklist of **naming** behaviors:

_____. Is the student asked to **recall** a symbol or set of symbols?

_____. Is the student asked to **name** an object or its parts?

_____. Is the student asked to name **functions** or **characteristics** of an object or its parts?

Naming is another word for memorizing the parts of some object or for memorizing a list of symbols and their names. Most of what we know is based on such memorized associations. One very important example includes the alphabet symbols and the corresponding letter names and sounds. Addition combinations and their sums, the times tables and their products, number symbols and their names all represent important symbol lists which must be memorized.

Be careful not to confuse naming with classification. In classification (see page 36), we are learning to recognize when some object, different from other objects, belongs in a particular category. In naming, we are learning to tag similar or identical objects, or the parts of these objects.

Memorizing a poem or the parts of a play is also symbol naming. A naming strategy can also be used for serial memorization tasks.

Read the sample **naming** objectives on the facing page.

THEN, GO TO P. 18

Acknowledgment

Some of the recommendations and illustrative material included in this section were adapted from materials prepared for the Individual Secondary Teacher Education Program (I–STEP) at BYU. These materials are titled: *The Memorization Paradigm*, and were authored by M. David Merrill, Wallace Allred and David Davies.

COGNITIVE DOMAIN, SAMPLE NAMING OBJECTIVES

SAMPLE OBJECTIVE 1

The 7th grade student (audience) will name (behavior) the lines and spaces of the treble staff in musical notation when notes are presented in any order (conditions). Satisfactory performance is the ability to name a note in two seconds or less (degree).

The behavior requires the student to name a set of symbols.

Note that the symbols are identical or almost so from one instance to the next. The student must learn at some point, however, that different kinds of notes (quarter, half, etc.) change only their duration, not their name.

SAMPLE OBJECTIVE 2

The 6th grade student (audience) will identify and name (behavior) the principal parts of the human eye including the following: cornea, iris, pupil, retina, lens, vitreous body, optic nerve, and fovea, when shown a diagram illustrating each of the parts listed (degree).

The behavior requires the student to name the parts of an object.

A diagram is used in this case to make it easier for the student to distinguish the different parts of the object. Representations are often used to teach the names of real objects.

SAMPLE OBJECTIVE 3

The kindergarten student (audience) will recite (behavior) the pledge of allegiance to the flag in unison with the rest of the class or in solo (conditions) without hesitation or error and with clear pronounciation of each word (degree).

This is a serial memorization where a student must name or repeat a set of symbols in sequence.

EVALUATION STRATEGIES FOR A COGNITIVE NAMING OBJECTIVE

Display the object(s) or symbol(s) and ask the learner to name them without help or hesitation.

When designing a naming test, consider the following:

Delay of Response: When a student has naming behavior, he should be able to respond without hesitation. If his response is slow, or he has to "think about it," then his response is inappropriate. It is difficult to set an exact limit, but you should be able to determine when the student's hesitation is too long.

Number Correct: Usually, knowing the name of one symbol, part, or function, does not substitute for not knowing the name of another symbol, part, or function. Consequently, in most cases, the criterion of acceptable performance should be 100 percent. If it is unnecessary for a student to know the name of every symbol, part, or function, then the unnecessary elements should be eliminated from the objective rather than setting a "four-out-of-five" or some similar criterion.

Scrambled Order: In testing, as well as in practice, the order of presentation should be varied. This is especially important for evaluation and later stages of practice. If the names are always tested in the same order, the student may come to associate the name with its position rather than with the symbol or object. In serial tasks, such as memorizing a poem, this restriction obviously does not hold.

Live Versus Written Tests: Delay of response is most easily observed when a tester (the teacher, aide, or another student) points to the symbol or object and asks the learner to indicate the name and/or functions. When written tests are used to measure naming, they should be clocked so students do not have a long time to think of answers. If, during the first administration of a test, you watch a fast and slow student, you can get a good idea of the time to allow for each item.

EXAMINE THE SAMPLE EVALUATION STRATEGY ON THE FACING PAGE, AND TURN TO P. 20

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *The 7th grade student*

   Behavior: *will name the lines and spaces of the treble staff in musical notations*

   Conditions: *when notes are presented in any order.*

   Degree: *Satisfactory performance is the ability to name a note in two seconds or less.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *naming*

4. Write Your Strategy Prescription

   Comments

Presentation

Practice

Evaluation

Display:

1 2 3 4 5 6 7 8 9 10 11 12

Response: Names of notes, e, b, g, d, c, f, g, etc.

Directions: When I say a number, you say the name of the corresponding note.

Notes appear in **random** *order. Student could use a mnemonica, such as every good boy does fine, or face. Such mnemonic constitutes an* **undesirable** *hint which we want to avoid.*

Test must be paced. That is, the student should respond within two seconds or less.

Directions infer a tester who can pace stimulus and observe correct responses.

GO TO P. 20 FOR PRACTICE STRATEGIES

PRACTICE STRATEGIES FOR A COGNITIVE, NAMING OBJECTIVE

Display the symbol(s) or object(s) to be named and provide practice until the student is able to meet the criterion established by the objective.

The following considerations are important to insure appropriate practice:

REPEAT TO CRITERION: The learner should be required to practice until he is able to name the symbols or objects without hesitation and with few or no errors, as established by the criterion of your objective. A single practice session should not be too long. Retention is improved if short practice sessions are spread over several days.

FEEDBACK: During practice, the learner should be told whether or not his response was correct as soon as possible.

HIDDEN HINTS: During practice, every effort should be made to eliminate hidden hints which help the student respond without adequately associating the name or function with the object or symbol involved.

Some hidden hints which frequently interfere with learning are the following:

1) If, on each practice trial, the symbols or objects are always in the same location, a student comes to associate the name with the location, rather than with the appropriate object or symbol.

2) If, during practice, the teacher mouths the name or gives other facial expressions which help the student, he will fail to associate the response with the symbol or object.

CHUNKING: Most students cannot keep in mind more than a few (usually no more than 6 or 7) different associations at one time. Acquisition of naming behavior is facilitated if the task is divided into chunks with additional associations added as the student masters members of the first segment.

EXAMINE THE SAMPLE PRACTICE STRATEGIES ON THE FACING PAGE, AND TURN TO P.22

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *The 7th grade student*

   Behavior: *with name the lines and spaces of the treble staff in musical notations*

   Conditions: *when notes are presented in any order.*

   Degree: *Satisfactory performance is the ability to name a note in two seconds or less.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *naming*

4. Write Your Strategy Prescription

   Comments

Each display is a chunk of the whole task. Display No. 1 has five notes. Display No. 2 introduced three new notes and reviews one old note. This chunking pattern will be repeated with new notes and review until all the notes have been introduced.

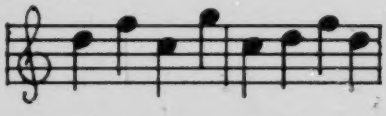
Hidden hints are eliminated by random order of presentation. Dots indicate that each display should be longer to avoid repetition of same pattern.

Directions indicate immediate feedback and repetition to criterion of no errors and immediate response.

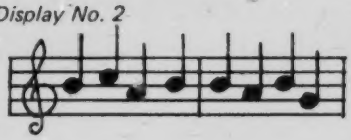
Presentation

Practice

Display No. 1



Display No. 2

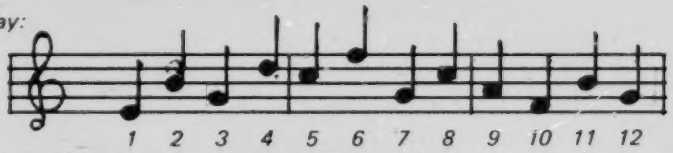


Response: Names of notes d, f, c, g, c, d, f, d, etc.

Directions: When I say a number, you say the name of the corresponding note. After you respond, I will say OK or NO and then say the next number. Repeat with display No. 1 until you can say every note in less than 2 seconds with no errors. When you have mastered display No. 1, go on to display No. 2, etc.

Evaluation

Display:



Response: Names of notes e, b, g, d, c, f, g, etc.

Directions: When I say a number, you say the name of the corresponding note.

GO TO P. 22 FOR PRESENTATION STRATEGIES

PRESENTATION STRATEGIES FOR A COGNITIVE, NAMING OBJECTIVE

The presentation should clarify the task for the student and motivate him to learn it. After explaining the task, show the student the symbol or object, point to the parts, and name them or their functions.

The presentation should include the following:

OBJECTIVE: Tell the student what he will be expected to do following the learning. Clearly indicate the criterion of acceptable performance. If his performance will be timed, be sure he is informed.

MOTIVATION: Explanations as to why this task is important should be presented at this time. This information might include the task's practical application, its relationship to other tasks, etc.

DEMONSTRATION: Show the student a sample display containing all the symbols or objects he will be expected to name. Name them for him. As closely as possible, this demonstration should resemble the terminal behavior expected of the student.

MNEMONIC DEVICES: If a memory aid can be identified which will assist the student to remember the items being taught, this device should be introduced during the presentation. Be careful to avoid disruptive memory aids which require the student to always use the same order or in some other way hinders rapid responding to the stimuli presented in any order.

EXAMINE THE SAMPLE PRESENTATION STRATEGIES ON THE FACING PAGE, AND TURN TO P. 24

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *The 7th grade student*

   Behavior: *will name the lines and spaces of the treble staff in musical notations*

   Conditions: *when notes are presented in any order.*

   Degree: *Satisfactory performance is the ability to name a note in two seconds or less.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *naming*

4. Write Your Strategy Prescription

Comments

Some objectives might need further explanation. If the class is new to music, distinction between treble and bass clef may be necessary. Point out relevant aspects of display, like five lines and treble clef.

Context would determine the explanation given, usually to facilitate some form of reading music.

Presentation

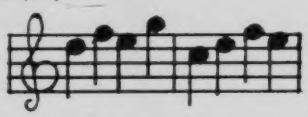
Give objective to the student.

Indicate why naming the lines and spaces of the treble staff is necessary for sight singing or instrument playing.

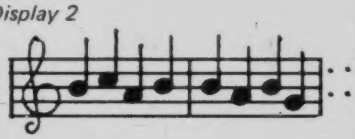
Demonstrate performance using display similar to that shown for evaluation below.

Practice

Display 1



Display 2

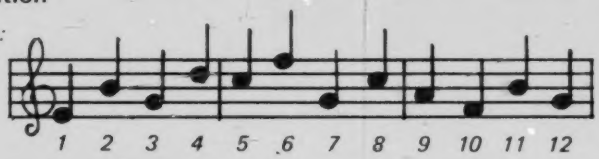


Response: Names of notes d, f, e, g, c, d, f, e, etc.

Directions: When I say a number, you say the name of the corresponding note. After you respond, I will say OK or NO and then say the next number. Repeat with display 1 until you can say every note in less than 2 seconds with no errors. When you have mastered display 1 go on to display 2, etc.

Evaluation

Display:



Response: Names of notes, e, b, g, d, c, f, g, etc.

Directions: When I say a number, you say the name of the corresponding note.

GO TO P. 24 FOR ANOTHER SET OF SAMPLE STRATEGIES.

SAMPLE OBJECTIVE 2

1. **Write Your Objective**

   Audience: *The 6th grade student*

   Behavior: *will name and identify the principle parts of the human eye including the following: cornea, iris, pupil, retina, lens, vitreons body, optic nerve and fovea,*

   Conditions: *when shown a diagram illustrating an eye.*

   Degree: *He should name and correctly identify each of the parts listed in one minute or less.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *naming*

4. Write Your Strategy Prescription:

Comments

Objective is straight forward and can be given to students. Be sure all words they need to learn are identified.

Importance of eye and explanation of how it works helps motivate student to learn names of parts. Understanding how the eye operates is an objective which would probably follow this objective in an instructional sequence. The two might be taught simultaneously. The camera/eye analogy also has mnemonic value for the student.

Displays introduce only a few names at a time. As the student masters them, a few more are added. Note repositioning of arrows in Display 2 to eliminate hidden hints.

Student can check his answer by turning display over. Hence, feedback is immediate after giving three or four names.

A different display is used to eliminate hidden hints. Pacing is required when students must respond to timed tests. Response is written and can be checked by grader.

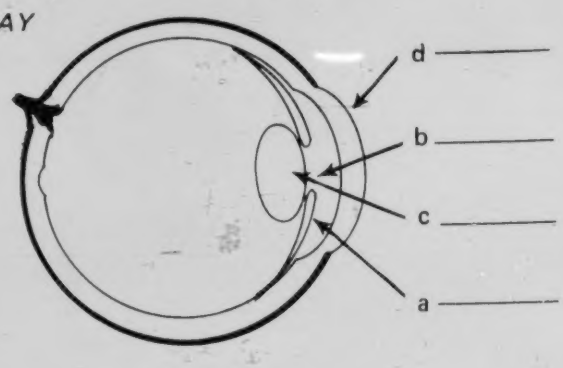
Presentation

Give objective to student.

Indicate why eye is important. Use analogy with camera.

Demonstrate naming of parts on picture, diagram, or model. Introduce mnemonic aids to help the student remember novel words, e.g., cornea = **crown** *around opening, etc.*

SAMPLE DISPLAY



Practice

Display 1	*Display 2*	
Picture with arrows only to iris, pupil, lens, cornea, labeled a, b, c, etc.	*Same picture with new arrows and five new locations, labeled a, b, c, etc.*	*ETC.*

Responses: Names: iris, pupil, lens, cornea, etc.

Directions: Practice naming each part in display 1 until you can name each part without hesitation. Then go to Display 2, etc. Correct names are filled in on back of each display. Think about the correct name each time you look back. Do not go immediately to the next item.

Evaluation

Display: *Different picture here with arrows labeled a, b, d, etc.*

Response: Part names: Iris, pupil, lens, etc.

Directions: Refer to the chart. Write the name of each part of the eye opposite the appropriate number on the answer sheet. You have one minute.

WRITE YOUR OBJECTIVE AND STRATEGIES HERE

1. **Write Your Objective**
   Audience:
   Behavior:
   Conditions:
   Degree:
2. The Domain is:
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription:

Presentation

Practice

Evaluation

Explain why you used a particular procedure

(see pps. 18, 20 and 22.)

GO TO P. 109.

STEP FOUR	WRITE A STRATEGY PRESCRIPTION Cognitive Domain, An Event Naming Strategy

A simplified checklist of **event naming** behaviors:

—— Does your objective require the student to remember facts or episodes and specific relationships about some event?

—— Does your objective require the student to sequence or otherwise relate episodes of an event or steps of a process?

It may have occurred to you that the strategy for naming symbols or objects and the strategy for event naming are very similar. There is one significant difference. Students may learn to name the parts of an object when the names being learned have little or no meaning. It is seldom justified, however, for a student to recall episodes in an event unless these episodes have meaning for him. Given an example of a concept involved in the episode or in the generalization, the student should be able to recognize the instance as a member of a particular category. If he cannot, he should be taught the concepts involved before he is asked to remember particular episodes. (See the classification or rule using strategy).

Did it occur to you that recalling episodes from a story is an event naming behavior?

Did it occur to you that listing steps for an experimental procedure or for carrying out some process is also an event naming behavior?

READ THE SAMPLE EVENT NAME OBJECTIVES ON THE FACING PAGE. THEN, GO TO P. 28.

COGNITIVE DOMAIN, SAMPLE EVENT NAMING OBJECTIVES

SAMPLE OBJECTIVE 1

Given the name of each event in the series of episodes which helped lead to the start of the Civil War (condition), the eighth grade student (audience) will recognize or list (behavior) the significant facts associated with that event. Acceptable performance is remembering 75% of the significant facts for 80% of the events (degree).

This objective requires the student to remember specific events and some of the details of each event. The behavior is recall of related clusters of items.

The objective also requires the student to remember the sequence or other relationships (time, place, affiliation) of these events.

SAMPLE OBJECTIVE 2

The eight grade girl (audience) will list (behavior) the steps in the recipe for making white sauce; or, given an assortment of materials (condition), will demonstrate making white sauce in a dry run (behavior). All steps must be indicated in the proper sequence (degree).

This objective requires the student to name the series of steps we call a recipe. The behavior is recall.

Remembering all the steps and the sequence is required by this objective.

SAMPLE OBJECTIVE 3

Given a single lens reflex camera with a built-in light meter (condition) the junior high school student (audience) will describe or demonstrate (behavior) the steps necessary for taking a picture. Every step and the correct procedure must be indicated (degree).

Again, a series of steps is involved. Remembering is the behavior emphasized.

This series of steps can be carried out in any of several sequences. The important thing is to include all steps.

EVALUATION STRATEGIES FOR A COGNITIVE, EVENT NAMING OBJECTIVE

By means of recognition or recall questions, have the student demonstrate his memory of important facts or episodes. By means of ranking, have the student indicate his memory of the relative importance of certain facts, relationships, or the sequence of events.

Ability to remember an episode of an event can be tested by having the student retell or answer specific questions concerning the facts or ideas surrounding the event. Either recognition (multiple choice, matching, true-false) or recall (short answer, essay) questions can be used.

RANKING: A useful, but often overlooked technique, is a ranking procedure. This procedure is especially appropriate when it is difficult or impossible to say that a given answer is right or wrong. The student is asked to order a group of statements on the basis of specified criteria. He is then scored according to how well his ranking corresponds with the preferred ranking of the teacher. This allows the student to get partial credit for answers that approximate the preferred ranking. Some of the dimensions that can be used are as follows: rank facts in order of their occurrence (chronology); rank the steps described in the correct sequence (process); rank the reasons given for the occurrence of the event in order of importance; rank the reasons given in order of importance; rank the reasons given in order of their relevance; or rank the events according to interest. The formal scoring technique consists of calculating a "rank-order correlation coefficient," however, almost any scoring scheme which gives partial credit for closer approximations to the preferred ranking is adequate.

EXAMINE THE SAMPLE EVALUATION STRATEGY ON THE FACING PAGE, AND TURN TO P. 30.

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *The 8th grade student*

   Behavior: *will recognize and list the significant facts associated with the start of the Civil War,*

   Conditions: *given the name of each event in a series of episodes which helped lead to the start of the Civil War.*

   Degree: *Acceptable performance is remembering 75% of the significant facts for 80% of the events.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *event naming*

4. Write Your Strategy Prescription

   Comments

Presentation

Practice

Evaluation

Multiple choice test. Stem indicates event, alternatives indicate details which student should associate with the event.

Criterion: Four out of five details for each event. Knowing details of one event will not substitute for ignorance of another event.

Part II of the exam presents details of each event on list and asks the student to order them in sequence. Score indicates closeness of correspondence to correct sequence. This same procedure could be used for entire set of major events.

Note: No items should appear on the test that were not clearly identified during each day's presentation.

Note the use of a ranking procedure.

GO TO P. 30 FOR PRACTICE STRATEGIES.

PRACTICE STRATEGIES FOR A COGNITIVE, EVENT NAMING OBJECTIVE

Present some organizing scheme to the student, calling his attention to those details which will give meaning to the facts and episodes.

During practice, it is important to provide the student assistance in focusing his attention on the facts and episodes he will be expected to remember. The following suggestions have been found to aid in providing appropriate practice.

Organizing Scheme: Most events and ideas are complex, involving a multitude of details, many of which will catch the student's attention even though they may have little importance or relevance for the objective. The student's memory can be assisted and the important details made more obvious if some organizing scheme is used. The scheme most frequently used is chronology, i.e., putting important parts of the event in sequence according to their occurrence. However, this is not always the most efficient or desirable organizing scheme. Other schemes include an identification of processes involved (these processes may be social, psychological, or economic if the event involves people; or they may be chemical, geological, or electrical for natural phenomena). A third organizing scheme is to identify phases or stages in the event. Having presented the organizing scheme, the important details corresponding to each category in the organization are identified and reviewed with the student. This review can take place during a second showing of the event.

Concrete Detail: A frequent weakness in teaching events stems from our tendency to depend only on abstraction and simplification. As teachers, we frequently represent events with generalized statements alone. The student, not having had the advantage of our experience, does not have associated images, and, hence, loses much of the meaning involved. Because he does not have the image dimension of meaning structure, he is less able to remember facts or episodes, but tries to remember words alone. When presenting the event in both presentation and practice, it is important to portray concrete detail as well as abstract representations. This is frequently referred to as making the event "live." Interesting anecdotes, asides, or details, rather than distracting the student, frequently provide the meaning which enables him to more easily remember the important facts even though the concrete details themselves may be of little importance.

Inserted Questions: It has been found that a student remembers more if questions are inserted at frequent intervals throughout the practice material. These questions should be very specific in nature. Questions should be placed to maximize the accomplishment of your objective. If the question is presented first, the student will look for the answer and ignore the other material. Later, he will tend to remember only the fact or idea requested by the question. If the question is presented following a section of material, he will tend to remember many details in addition to the answer to the question.

EXAMINE THE SAMPLE PRACTICE STRATEGIES ON THE FACING PAGE, AND TURN TO P. 32

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *The 8th grade student*

   Behavior: *will recognize and list the significant facts associated with the start of the Civil War,*

   Conditions: *given the name of each event in a series of episodes which helped lead to the start of the Civil War.*

   Degree: *Acceptable performance is remembering 75% of the significant facts for 80% of the events.*

2. The Domain is: *cognitive*
3. The Appropriate Strategy is: *event naming*
4. Write Your Strategy Prescription

   Comments

The time line is as follows:

1820
Missouri compromise
1830
California compromise
1852
fugitive slave law
Uncle Tom's Cabin
. . .
attack on Fort Sumpter

As details of events are identified, they are listed under each heading. This device serves as organization for the student.

Note inserted questions to focus attention on specific details.

Portrayal of each event should present considerable detail. For example, use an actual exerpt from debate on Missouri Compromise, passages or a portrayal of scenes from Uncle Tom's Cabin, etc.

Presentation

Practice

Following each day's portrayal of the event, recap the significant features. Start each recap with questions focusing attention on the significant details to be remembered. Have the student respond to the questions. List details to be remembered on a time line or other relevant structure.

Care should be taken to relate abstract labels clearly and unambiguously to detailed representations. Use such memory assist procedures as directing students to "close your eyes and try to picture the scene at Fort Sumpter in your mind."

Evaluation

Multiple choice test. Stem indicates event, alternatives indicate details which student should associate with the event.

Criterion: Four out of five details for each event. Knowing details of one event will not substitute for ignorance of another event.

Part II of the exam presents details of each event on list and asks the student to order them in sequence. Score indicates closeness of correspondence to correct sequence. This same procedure could be used for entire set of major events.

GO TO P. 32 FOR PRESENTATION STRATEGIES.

PRESENTATION STRATEGIES FOR A COGNITIVE, EVENT NAMING OBJECTIVE

Recount the event for the student. Indicate those facts or episodes he will be expected to remember. Say why it is important to remember these facts or episodes.

Reenact the Event: If a student is to remember facts or relationships about an event, it is important that the presentation of that event be as vivid as possible. This does not mean that the entire event must be in sufficient detail so that the student can imagine the series of events themselves in addition to the abstract generalizations about the event. During the initial presentation, it is usually better to present the entire story without interrupting for questions or anything else which would destroy continuity.

Give the Objective: Following this presentation, the student should be told exactly which parts of the event or details of the idea he will be expected to retain as images with the corresponding labels and abstract verbal representations.

Motivation: Remembering facts can be tedious. Be sure the student knows why he should.

EXAMINE THE SAMPLE PRESENTATION STRATEGIES ON THE FACING PAGE, AND TURN TO P. 34

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *The 8th grade student*

   Behavior: *will recognize and list the significant facts associated with the start of the Civil War,*

   Conditions: *given the name of each event in a series of episodes which helped lead to the start of the Civil War.*

   Degree: *Acceptable performance is remembering 75% of the significant facts for 80% of the events.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *event naming*

4. Write Your Strategy Prescription

Comments

This is a complex objective and will take several lessons spread over several weeks.

Lesson 1 summarizes. Then, each day is dedicated to a detailed description of each event. If an event doesn't deserve a day, leave it out.

Presentation

Objective: Indicate to the student that he is to remember the major events leading to the Civil War.

List the events on a time line. Summarize each event. Other structuring devices such as geographic location may help the student.

Indicate importance of knowing these events as a means of understanding current affairs.

One by one, describe or portray each event. List the significant details that the student should remember.

Practice

Following each day's portrayal of the event, recap the significant features. Start each recap with questions focusing attention on the significant details to be remembered. Have the student respond to the questions. List details to be remembered on a time line or other relevant structure.

Care should be taken to relate abstract labels clearly and unambiguously to detailed representations. Use such memory assist procedures as directing students to "close your eyes and try to picture the scene at Fort Sumpter in your mind."

Evaluation

Multiple choice test. Stem indicates event, alternatives indicate details which student should associate with the event.

Criterion: Four out of five details for each event. Knowing details of one event will not substitute for ignorance of another event.

Part II of the exam presents details of each event on list and asks the student to order them in sequence. Score indicates closeness of correspondence to correct sequence. This same procedure could be used for entire set of major events.

GO TO P. 34 FOR ANOTHER SET OF SAMPLE STRATEGIES

SAMPLE OBJECTIVE 2

1. **Write Your Objective**

   Audience: *The eighth grade girl*

   Behavior: *will list the steps in the recipe for making white sauce; or demonstrate making white sauce in a dry run*

   Conditions: *using paper and pencil, or an assortment of ingredients.*

   Degree: *All steps must be indicated in proper sequence.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *event naming*

4. Write Your Strategy Prescription

Presentation

Objective: Tell the students you are going to teach them the recipe for white sauce.

Demonstration: Go through the steps with actual materials. Clearly identify each step as you proceed. Stress importance of remembering each step and getting steps in correct sequence.

Motivation: Point out that white sauce is a basic foundation for many recipes. It is really inconvenient to look up the recipe each time you use it, etc.

Practice

Organizing Scheme: Stress that three main steps can be remembered by phrase, "Butter-flour-milk."

Review steps: 1. Melt butter. 2. Add flour and seasonings until bubbly. 3. Remove, add milk. 4. Bring to boil.

Dry run once with steps written out, once without written steps, but naming the step prior to carrying it out.

Make sauce using materials.

Evaluation

Directions: List steps in making white sauce

OR

Directions: Using assembled materials, demonstrate a dry run procedure for making white sauce.

Criterion: The student remembers each step in proper sequence.

Comments

Actual demonstration used to provide as real an experience as possible, augmented by labeled representational charts.

The phrase, "Butter-flour-milk" is said rapidly like sunflower. This provides a mnemonic device to help the student remember the three principal step in sequence. It is a good mnemonic because "butter-flower" is a more descriptive term than white sauce.

The dry run makes the experience more meaningful. Even though our objective is to remember a recipe, rather than to make the sauce, it is better to memorize while doing.

We did not insert questions per se but did require the student to name the steps as she proceeds.

Note our evaluation does not require the student to make the sauce. That was not part of our objective.

WRITE YOUR OBJECTIVE AND STRATEGIES, HERE

1. **Write Your Objective**
   Audience:
   Behavior:
   Conditions:
   Degree:
2. The Domain is:
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription

Explain why you used a particular strategy.
(See pps 28, 30 and 32.)

Presentation

Practice

Evaluation

GO TO P. 109

STEP FOUR	WRITE A STRATEGY PRESCRIPTION Cognitive Domain, A Classification Strategy

A simplified checklist of **classification** behaviors:

— Does your objective require the student to identify particular symbols, objects, or events which have not previously been identified as being members of a particular category or group?

While it is easy to recognize some categories for which this strategy is appropriate, you may not recognize the inclusive nature of classification behavior. When students sort trees into various species, or bugs into insects or spiders, or flowers into annuals or perennials, etc., they are dealing with relatively obvious examples. However, almost every word in the language really refers to a class of objects or events. Terms like "understanding" and "comprehension" usually mean that the student can identify a new object or event as a member of a particular category or concept. Concepts like **adverb** and **noun** refer to words used in a particular way in sentences. When a student can circle nouns or adverbs, he is really classifying new instances. Concepts like **bride** or **uncle** refer to particular relationships between people. If, when given appropriate information, a student can identify a person as an uncle or a bride, he is classifying a new instance of one of these concepts.

It may occur to you that, for many concepts, society disagrees on which events are to be included in a particular class. Concepts like **love** and **democracy** refer to sets of complex ideas and events. A student who is able to identify a particular event as an instance of love or democracy is said to misunderstand if his classification disagrees. When you teach a student to correctly classify new instances, you get him to categorize the world consistent with either a majority of society, a particular minority, or perhaps a particular individual. Nevertheless, almost all understanding depends on a student's ability to classify according to some criteria.

READ THE SAMPLE CLASSIFICATION OBJECTIVES ON THE FACING PAGE. THEN, TURN TO P. 38

Acknowledgements

The material presented in this section is adapted from a book in preparation by M. David Merrill and Robert D. Tennyson, titled *Teaching concepts: An Instructional Design Guide.*

Ideas and suggestions included in this strategy also come from the following programmed presentation: Markle, Susan M. and Tieman, Philip, *Really Understanding Concepts: In Frumious Pursuit of the Jabberwock*, Chicago: Tieman and Associates, 1969.

COGNITIVE DOMAIN, SAMPLE CLASSIFICATION OBJECTIVES

SAMPLE OBJECTIVE 1

The junior high school science student (audience) when shown actual cloud formations or pictures of them (conditions) will label (behavior) clouds as being cirrus, stratus, cumulus, or nimbus. He should be correct on all easy examples and at least 50% correct on the difficult or more ambiguous examples (degree).

This is really four classes being taught simultaneously. Groups of concepts are often taught together.

This objective requires the student to classify objects (clouds) into one of four categories. Obviously, identifying an object as a cloud or not a cloud is also a concept task, but assumedly, one which these students have already learned.

The thing being classified is clouds or representations of clouds.

SAMPLE OBJECTIVE 2

When viewing a soccer match, or representation of such a match (conditions), (audience inferred), be able to correctly identify (behavior) the following activities: goal, direct kick, indirect kick, dribbling, heading, and off-sides. All obvious instances will be recognized and at least 2/3 of the borderline instances correctly identified (degree).

Like sample objective 1, this objective entails a group of concepts being taught simultaneously.

This objective requires the student to classify events (aspects of a soccer game) into one of several categories.

SAMPLE OBJECTIVE 3

The junior high school student (audience), when given sentences where certain words are underlined or in some other way identified (conditions), will correctly indicate (behavior) which are adverbs. He will recognize nine out of ten correctly and should miss only those which are difficult examples (degree).

"Adverb" is the name of the category. The instances are words which are adverbs.

This objective requires the student to correctly classify verbal symbols (words) which are used in a particular way in a sentence.

EVALUATION STRATEGIES FOR A COGNITIVE, CLASSIFICATION OBJECTIVE

Present instances of the concept class which have not previously been identified and ask the student which are examples and which are nonexamples.

The purpose of the test is to use enough examples to infer from the student's performance that, if he were presented additional new examples, he would recognize them as instances of the same category. It is never possible to be completely sure that a student has acquired a concept, but, if you use the following suggestions, you can be reasonably confident.

SCRAMBLE EXAMPLES: Both examples and nonexamples should be used, but should be presented in a scrambled order to avoid hidden hints. Notice that in practice, it is suggested you simultaneously present **contrasting** examples. In a test, this procedure constitutes a hidden hint and should be avoided.

WATCH FOR ROTE RECALL: Perhaps the most frequent mistake in testing concepts is to have the student name the characteristics of a particular category. This does not measure acquisition of a concept; it measures naming behavior. Remember, recall of an idea does not measure understanding the idea.

SLIDING CRITERIA: It is tempting to require the student to correctly classify a certain ratio of examples, say eight out of ten. When one considers example difficulty, however, it is often better to use sliding criteria. Such criteria would indicate that the student should get 100% of the easy examples and perhaps half of the difficult examples, the rationale being that if he misses easy examples, he doesn't have the idea, while he may miss some hard examples and still have a fairly good understanding.

TEST FORMAT: The easiest test is to present an example and a nonexample and ask the student to indicate which is which. When several concepts are tested simultaneously, the student can match category names to a presentation of several instances. When the categories are somewhat ambiguous, it may be desirable to have the student indicate why a given example belongs or why a nonexample does not belong.

EXAMINE THE SAMPLE EVALUATION STRATEGY ON THE FACING PAGE, AND TURN TO P. 40

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *The junior high school science student*

   Behavior: *will label clouds as being cirrus, stratus, cumulus or nimbus*

   Conditions: *when shown actual clouds or pictures of them.*

   Degree: *100% correct on all easy examples, and at least 50% correct on the difficult or more ambiguous examples.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *classification*

4. Write Your Strategy Prescription:

   Comments

Presentation

Practice

Evaluation

Display: Pictures of clouds (1-2-3 type)

Picture	Picture	Picture	Picture
1	2	3	4

(Not used during class)

Response: Write name of cloud type.

Directions: You will be shown some pictures of cloud formations. Write the type of cloud pictured opposite the number on your answer sheet.

Criteria: The test should contain at least 12 pictures. Four of the items are very difficult to discriminate. The student should get all easy items and at least 2 of the hard items.

New examples not used in class.

An example of a cumulus cloud is a nonexample of a cirrus cloud. When several related concepts are being taught, examples of one concept are usually the best nonexamples of the other concepts.

No rote recall. S is asked to classify new instances.

Matching name to object format.

Sliding criteria.

GO TO P. 40 FOR PRACTICE STRATEGIES

PRACTICE STRATEGIES FOR A COGNITIVE, CLASSIFICATION OBJECTIVE

Provide practice in identifying instances of symbols, objects, or events new to the student.

The following suggestions will increase the effectiveness of the practice experience.

NEW EXAMPLES: Because we want the student to learn a concept rather than recall what he has seen, it is important that we present **new** examples the student has not seen before. If the examples used have already been identified for the student, then he may merely learn to name particular objects or symbols, or recall generalizations about particular events, rather than learn the concept.

FEEDBACK: After a student has responded to an example-nonexample pair by indicating which is the example, he should be given the correct answer. In addition, he should be told why, by having the relevant characteristics clearly identified for the example and their absence identified for the nonexample.

NONEXAMPLES: It has been found that students learn concepts easier when examples are contrasted with nonexamples. A simultaneous presentation of an example together with a nonexample, as similar to the example as possible, helps the student see those features which characterize the example.

CONTRASTING EXAMPLES: When two examples are as different as possible, the student learns to focus on the distinguishing characteristics and to recognize new examples which differ from those used during instruction. In the practice exercises, students should be presented contrasting examples.

When both of the previous suggestions are combined, the result is a simultaneous presentation of two dissimilar examples, each contrasted with similar nonexamples.

DIFFICULTY: Some examples of an idea are easy to recognize while some are difficult. If you present all easy examples, the student may have trouble recognizing hard examples because he will have only part of the concept. On the other hand, all hard examples not only makes the task unpleasant, but may cause the student to include nonexamples which are difficult to discriminate. The best procedure is to present some hard and some easy examples. Most students prefer an easy to hard sequence.

EXAMINE THE SAMPLE PRACTICE STRATEGY ON THE FACING PAGE, AND TURN TO P. 42.

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *The junior high school science student*

   Behavior: *will label clouds as being cirrus, stratus, cumulus or nimbus*

   Condition: *when shown actual clouds or pictures of them.*

   Degree: *100% correct on all easy examples, and at least 50% correct on the difficult or more ambiguous examples.*

2. The Domain is: *cognitive*
3. The Appropriate Strategy is: *classification*
4. Write Your Strategy Prescription

   Comments

Pictures are different from those used in presentation or evaluation.

Note feedback helps the student to see relevant characteristics.

Simultaneous presentation of several concepts, hence examples of one serve as nonexamples of the other.

Each display contrasts two or more different types. Over several displays, the student will see many different contrasts.

Early examples will be obvious, but as practice proceeds, the pictures will become more ambiguous and difficult to classify.

Presentation

Practice

Practice	*Display*		*Feedback*	*Display*	
Picture	*Picture*	...	*Drawing*	*Drawing*	...

A set of twenty pictures, each of a different kind of cloud. A corresponding set of line drawings emphasizing the relevant characteristics.

Response: Appropriate cloud name.

Directions: Name each type of cloud. Tell me why the name is appropriate by pointing out distinctive characteristics. After your response, I'll show you a drawing to help you see the distinctive features.

Evaluation

Display: Pictures of clouds (1-2-3 type)

Picture	*Picture*	*Picture*	*Picture*	...
1	*2*	*3*	*4*	

(not used during class)

Response: Write name of cloud type.

Directions: You will be shown some pictures of cloud formations. Write the type of cloud pictured opposite the number on your answer sheet.

Criteria: The test should contain at least 12 pictures. Four of the items are very difficult to discriminate. The student should get all easy items and at least 2 of the hard items.

GO TO P. 42 FOR PRESENTATION STRATEGIES

PRESENTATION STRATEGIES FOR A COGNITIVE, CLASSIFICATION OBJECTIVE

Indicate the objective. Define the class or classes. Show examples and nonexamples and point out the characteristics by which they are so identified. Explain why classifying members of the class is useful and important.

Your presentation should consist of the following parts.

OBJECTIVE: Show the student some representation of the symbol, object, or event. Indicate its name. Tell him that his task will be to identify other instances which are members of the same category. Indicate whether he will be expected to identify all instances or whether certain instances will be more important than others.

DEFINITION: A definition is a list of the characteristics which determine class membership. Indicate these characteristics to the student and define them further, if necessary.

INSTANCES: Present an example of the class, pointing out the relevant characteristics to the student. Show him a nonexample which resembles the example. Point out the missing characteristics. Repeat with several example-nonexample pairs.

MOTIVATION: Tell the student why the classification scheme is important to understand. Indicate other tasks he will be able to learn if he is able to classify instances of this class.

EXAMINE THE SAMPLE PRESENTATION STRATEGY ON THE FACING PAGE, AND TURN TO P. 44

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *The junior high school science student*

   Behavior: *will label clouds as being cirrus, stratus, cumulus or nimbus*

   Condition: *when shown actual clouds or pictures of them.*

   Degree: *100% correct on all easy examples, and at least 50% correct on the difficult or more ambiguous examples.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *classification*

4. Write Your Strategy Prescription:

Comments

Examples of one type provide nonexamples of another type.

Line drawings help the student discriminate the relevant characteristics.

Reference to weather prediction helps the student see the importance of the task.

Presentation

Objective: Tell the student he is going to learn to identify different types of clouds.

Show a set of four pictures, one of each type. Name each type. Show line drawings which emphasizes relevant characteristics. List the characteristics of each type.

Explain how cloud types help with weather prediction.

Practice

Practice	*Display*		*Feedback*	*Display*	
Picture	*Picture*	...	*Drawing*	*Drawing*	...

A set of twenty pictures, each of a different kind of cloud. A corresponding set of line drawings emphasizing the relevant characteristics.

Response: Appropriate cloud name.

Directions: Name each type of cloud. Tell me why the name is appropriate by pointing out distinctive characteristics. After your response, I'll show you a drawing to help you see the distinctive features.

Evaluation

Display: Pictures of clouds (1-2-3 type)

Picture	*Picture*	*Picture*	*Picture*
1	*2*	*3*	*4*

(not used during class)

Response: Write name of cloud type.

Directions: You will be shown some pictures of cloud formations. Write the type of cloud pictured opposite the number on your answer sheet.

Criteria: The test should contain at least 12 pictures. Four of the items are very difficult to discriminate. The student should get all easy items and at least 2 of the hard items.

GO TO P. 44 FOR ANOTHER SET OF SAMPLE STRATEGIES.

SAMPLE OBJECTIVE 2

1. **Write Your Objective**

   Audience: *(Audience merely inferred as any junior or senior high student)*

   Behavior: *Be able to correctly identify the following activities: goal, direct kick, indirect kick, dribbling, heading and off-sides*

   Conditions: *when viewing a soccer match or representation of such a match.*

   Degree: *All obvious instances will be recognized and at least 2/3 of the boarderline instances will be correctly identified.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *classification*

4. Write Your Strategy Prescription:

Comments

Be sure definitions include relevant characterisitcs and that during the slow motion presentations, you point out each characteristic of each event.

Slow motion helps the student see relevant characteristics.

Segments should be different from those used for presentation or evaluation.

After S responds, run the segment, again pointing out relevant characteristics, especially when he fails to recognize a given activity. Use slow motion for feedback, even after he is making identification in real time.

Each series should contrast correct execution with two or more incorrect executions of a given event.

Difficulty can be measured by asking the student to identify borderline cases.

Any game segment contains examples and nonexamples of each activity.

If I ask the student to describe the activity, he might use rote recall. Asking him to identify activities from film or video segments assures comprehension.

A sliding criterion can be applied by picking out borderline segments for some of the events.

Presentation

Indicate that the students are to identify various activities of a soccer game. List the name of each of the activities to be identified and describe the event.

Following each description, show a slow motion segment of each event. Call attention to the relevant movements and actions involved.

Point out why being able to correctly identify each activity is important for a referee or a coach.

Practice

Display: Show three game segments which illustrate correct activity, and two incorrect, but potentially confusing events. Slow motion should be used during early stages of practice. Later, the student should identify the activities in real time. Repeat until each event is practiced at least three or four times.

Response: Name the activity and indicate whether or not it was correctly executed.

Directions: During each segment I show you, name the activity and indicate whether or not it was correctly executed. If not, why not?

Evaluation

Display: Representation of segments of soccer game illustrating various activities. Point out a player by number and ask the student to name the activity.

Response: Name event components of the soccer game.

Directions: I will show you a series of segments of a soccer match. During each, you are to designate the activities of the designated player(s).

WRITE YOUR OBJECTIVE AND STRATEGIES HERE

1. **Write Your Objective**
   Audience:
   Behavior:
   Conditions:
   Degree:
2. The Domain is:
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription:

Explain why you used a particular strategy.
(see pps. 38, 40 and 42.)

Presentation

Practice

Evaluation

GO TO P. 109

STEP FOUR	WRITE A STRATEGY PRESCRIPTION Cognitive Domain: A Rule Using Strategy

A simplified checklist of rule-using behaviors:

— Does your objective require the student to use a rule to solve some problem?

— Does your objective require the student to use rules to produce a creative product?

A rule can be defined as a statement identifying an operation or series of operations which, when applied to a set of symbols, objects or events, produces for each operation a particular member of another set of symbols, objects or events. Arithmetic rules are perhaps the least ambigious example. A certain operation called addition (a rule for counting elements of two sets), when applied to any pair of integers, always results in a given sum (e.g., applying the addition rules to 3 and 4 will give the number 7). In English, spelling rules provide an example. The operation i before e except after c, will produce the correctly spelled word when applied to words containing both letters i and e.

Many problems involve a sequential application of several rules. In these situations, the student must learn to apply each operation in sequence to produce the solution or product. For example, solving a story problem involves one classification and two or more rules. First, the student identifies (classifies) the unknown. Second, he writes an equation by putting the unknown on the left and the known quantities on the right. Third, he applies one or more computational operations to find the solution.

The outcome of rule using is sometimes not an answer, but a product. Usually, product production requires learning several rules, as in painting a picture, writing a story, etc.

READ THE SAMPLE RULE USING OBJECTIVES ON THE FACING PAGE. THEN, GO TO P. 48

COGNITIVE DOMAIN, SAMPLE RULE USING OBJECTIVES

SAMPLE OBJECTIVE 1

High school English students (audience) will write a Shakespearean sonnet (behavior) using a theme of their choice (condition). The sonnet must be correct in form, having 14 lines, 3 quatrains, 1 couplet, with an abab, cdcd, efef, gg rhyme scheme, and iambic pentameter. The poem will be judged by student judges on the following points: appropriateness of message and flow of thought (degree).

This is a complex objective requiring several rules. The outcome is a product whose adequacy and form can be judged. However, it cannot be completely described.

Rules required include the following: A poem of 14 lines–4 quatrains and a final couplet.
Rhyme scheme: abab cdcd efef gg

SAMPLE OBJECTIVE 2

High school physics students (audience) will use Ohm's law to determine either the voltage, current or resistance in a DC circuit when given two of the values (conditions). Both the answer and the sequence used in solving the problem must be correct (degree).

This is a complex objective requiring several rules. The outcome is a solution which can be judged right or wrong.

The rules involved include: Arithmetic operations
Ohm's Law: Voltage = current x resistance.

SAMPLE OBJECTIVE 3

Junior high school algebra students (audience) will calculate (behavior) the area of a variety of simple polygons when given relevant dimensions (conditions). Both their formulation of the problem and their answer must be correct (degree).

This problem requires a series of rule using tasks. Some problems require a single rule, while others require two or more. The problems are solution oriented.

The rules involved include:
Arithmetic operations
Rectangle Area = base x altitude
Triangle Area = ½ base x altitude

Trapezoids and parallelograms require special rules for applying these basic rules.

EVALUATION STRATEGIES FOR A COGNITIVE, RULE USING OBJECTIVE

Present either a product production or solution oriented problem situation new to the student. Have him apply a given rule, generate a new rule, or produce a product. Judge the adequacy of his performance.

The following recommendations assure more adequate evaluation of rule using behavior:

New Problems: Because we want to measure the student's ability to use a rule and not to measure how well he remembers what he has been presented, it is important that the problems used for testing are new to the student.

Just as it is important for the student to practice with a variety of problem situations, adequate measurement also depends on observing the student's ability to use the rule in several different situations.

Evaluate Process: In many rule using situations, the solution is a right or wrong answer. While this answer is certainly an important way to judge the adequacy of the problem solution, it is frequently the case that a student will get the right answer for the wrong reason or will fail to get the right answer after successfully using the rule except for some minor mistake. In most problem solving situations, both the correct solution and the steps used in arriving at the solution should be used for judging the adequacy of the performance.

Step Recall Inadequate: Asking the student to list the steps necessary to arrive at a solution is **not** an adequate measure of his ability to use the idea. Listing the steps is event naming evaluation, not rule using evaluation.

Rule Recall Inadequate: Asking the student to state or recognize the rule is not an adequate demonstration of his ability to use the rule. To discover that the student can state or memorize the rule may be useful, but his being able to do so is not necessarily related to his ability to use the rule.

Product Judging: Often the result of using ideas to solve a problem is not a simple solution which can be judged right or wrong, but rather a product. Whenever something is produced, it is frequently judged by its beauty or utility rather than its rightness or wrongness. The very nature of the creative act makes it impossible to describe the product in advance. The problem situation is to set limitations and guidelines criteria for judging the product. Such criteria should be as detailed as possible. Whenever possible, checklists should be constructed which specify all of the known criteria and provide directions on how to apply the checklists. Checklists should be available to the problem solver prior to his undertaking the project.

After the product has been produced, it should be evaluated by two or more judges. Teachers often assume this judging responsibility themselves, failing to realize that teaching students to judge the adequacy of problem solving products might be as important an objective as learning to solve the problem. Teaching students to apply judging criteria not only enables them to be informed critics, but also helps them to more adequately evalute the products of their own labor.

EXAMINE THE SAMPLE EVALUATION STRATEGY ON THE FACING PAGE, THEN, TURN TO P. 50

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *High school science students*

   Behavior: *will use Ohm's law to determine either the voltage, current or resistance in a D.C. circuit*

   Conditions: *when given the values of the other two quantities*

   Degree: *Both the answer and the sequence used in solving the problem must be correct.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *rule using*

4. Write Your Strategy Prescription:

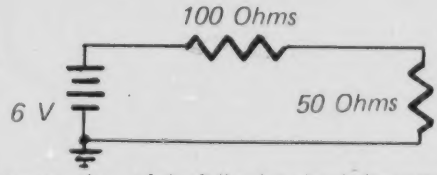
   Comments

Presentation

Practice

Evaluation

Display: A circuit diagram



Directions: Determine the current draw of the following circuit (or voltage or resistance).

Response: A number indicating amps, volts or resistance in ohms.

Criteria: 1) Formula correctly written for problem involved; 2) correct answer.

Diagram must be different from those used for practice and/or demonstration. Test includes several diagrams.

Variations could include determining the value required for a given resistor or the voltage required to overcome a given resistance.

GO TO P. 50 FOR PRACTICE STRATEGIES.

PRACTICE STRATEGIES FOR A COGNITIVE, RULE USING OBJECTIVE

Assess the student's grasp of prerequisite ideas about the objects, events, or ideas involved. If necessary, teach these component ideas. Provide rule using practice with a variety of rules and/or problem situations. Contrast inappropriate procedures with appropriate procedures.

The following suggestions will increase the effectiveness of rule using practice:

COMPONENT CONCEPTS: Before practice begins, it is important to measure whether or not a student has acquired ideas about the objects or events involved as part of the rule. After these ideas have been identified, they can best be measured using the suggestions given for the classification strategy. If it is found that the student has not already acquired the needed ideas, the practice suggestions identified for the classification strategy should be used to teach these ideas before going on to teach problem solving. You may be tempted to skip this step. Be careful! The most common cause of failure in learning to use rules is a result of a student's inability to classify instances of the component concepts.

PROBLEM VARIETY: Students will learn to use a rule better if a variety of problems are presented for practice. Two kinds of situations exist. In the first, a single rule or set of rules applies. The student should be presented with a number of different problems as different from each other as possible. If all of the problems are similar, the student will never learn to apply the rule to a new problem. In the second situation, the student may be required to learn a number of different specific rules for a single process. In this case, he should not only see a variety of different problems for each rule, but he should also be presented with a wide variety of different specific rules.

Because problem solving is complex and consequently time consuming, there is a tendency for the instructor to provide the student only one or two problems. It is crucial that the student be presented with a relatively large number of problems which meet the conditions for variety specified above. The more complex the problem solving process, the more problems needed. If the argument against including more problems is time, you need to determine whether or not you want the student to acquire rule using behavior.

ILLUSTRATE INAPPROPRIATE PROCEDURES: Many sources advocate that students should never see wrong procedures for fear they will learn the wrong way. There is growing evidence that the student will learn to use rules more easily if, during the problem solving practice, wrong procedures are contrasted with the correct procedure. After the student has attempted a problem, the correct procedure should be demonstrated and then contrasted with common or typical incorrect procedures. You must stress to the student which procedure is correct.

EXAMINE THE SAMPLE PRACTICE STRATEGY ON THE FACING PAGE, AND TURN TO P. 52

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *High school science students*

   Behavior: *will use Ohm's law to determine either the voltage, current or resistance in a D.C. circuit*

   Conditions: *when given the values of the other two quantities.*

   Degree: *Both the answer and the sequence used in solving the problem must be correct.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *rule using*

4. Write Your Strategy Prescription:

   Comments

It is assumed that most problem solving practice is preceded by some classification practice. We include here only the rule using practice, not any of the prerequisite instruction. Before practice, test the students knowledge of different circuit components. Find out if he knows how these elements affect resistance, current, voltage.

After the student calculates a given circuit, show him a problem correctly solved. Show each step. Point out common errors or omissions which frequently cause a student to make errors.

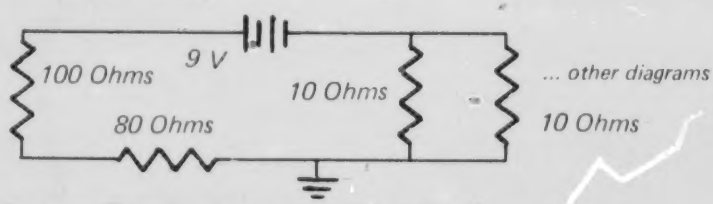
Present a variety of different circuits. Include all of the different circuit elements which the student has studied.

Presentation

Practice

1. Assess component concepts: voltage, amps, resistance.

2. Display circuit diagrams

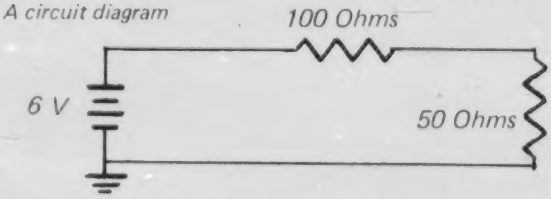


Response: The volts, ohms, or amps involved.

Directions: Determine the current (voltage, or resistance) of the following circuit. After each problem we will show you the correct procedure.

Evaluation

Display: A circuit diagram



Directions: Determine the current draw of the following circuit (or voltage or resistance).

Response: A number indicating amps, volts or resistance in ohms.

Criteria: 1) Formula correctly written for problem involved; 2) correct answer.

GO TO P. 52 FOR PRESENTATION STRATEGIES.

PRESENTATION STRATEGIES FOR A COGNITIVE, RULE USING OBJECTIVE

Present the student a problem typical of the type he will be asked to solve. State the rule required to solve the problem and then work through it showing the student each step in the process. Indicate whether the problem requires a specific solution, the identification of a new rule or procedure, or the producing of some product. If a product is to be produced, demonstrate the criteria for judging it. Indicate why learning to use the rule is important.

This step illustrates the process the student will be required to learn. During this demonstration, stress that while the problem demonstrated is typical of those the student will be required to solve, he will be asked to solve a new problem.

RESTRICTED RULE STATEMENT: If the rule presented is a general rule, then the specific values required by the demonstration problem should be indicated and the rule stated in both its general and specific form. If a generalized rule hasn't been identified, and the rule illustrated is merely typical of the type of rule required, then the student should be informed that this is only one kind of rule and shown one or two examples of other possible rules. The student should be informed during the demonstration whether a solution is devised or whether a product is the outcome. If the intended outcome is a product, the student should be shown how the product will be judged.

STEP BY STEP SOLUTION: Work through a problem with the students. Clearly identify each step in the process. Indicate which operation is appropriate at each step and how it is applied.

MOTIVATION: The reasons for learning to use the rule should be explained. If this rule relates to other rules, the nature of this relationship should be indicated.

EXAMINE THE SAMPLE PRESENTATION STRATEGY ON THE FACING PAGE, AND TURN TO P. 54.

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *High school science students*

   Behavior: *will use Ohm's law to determine either the voltage, current or resistance in a D.C. circuit*

   Conditions: *when given the values of the other two quantities.*

   Degree: *Both the answer and the sequence used in solving the problem must be correct.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *rule using*

4. Write Your Strategy Prescription

Comments

Demonstration presents an example, a formal statement of the rule, and shows the student what he will be expected to learn.

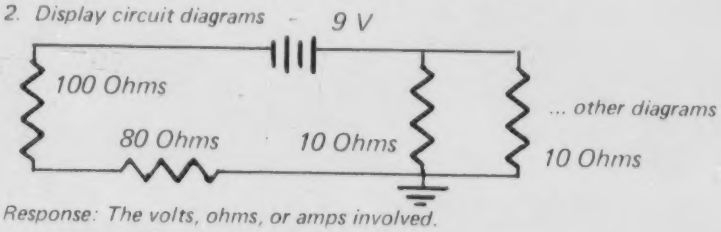
Presentation

State Ohm's Law (E=IR). Show a circuit diagram. Indicate that the student will be able to calculate either resistance, voltage, or current when given two of the other values for a given circuit. Explain the circuit illustrated. Show step by step solution and operations required for each step.

Tell the story of Ohm's struggle for recognition. Testify to the power of this simple law in electronics. Cite examples of very complex circuits where this law still holds.

Practice

1. *Assess component concepts; voltage, amps, resistance.*
2. *Display circuit diagrams*

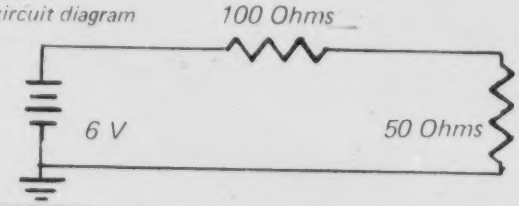


Response: The volts, ohms, or amps involved.

Directions: Determine the current (voltage, or resistance) of the following circuit. After each problem we will show you correct procedure.

Evaluation

Display: A circuit diagram



Directions: Determine the current draw of the following circuit (or voltage or resistance).

Response: A number indicating amps, volts or resistance in ohms.

Criteria: Formula correctly written for problem involved; 2) Correct answer.

GO TO P. 54 FOR ANOTHER SET OF SAMPLE STRATEGIES.

SAMPLE OBJECTIVE 2

1. **Write Your Objective**

   Audience: *High school English students*

   Behavior: *will write a Shakespearean sonnet having 14 lines, 3 quatrains and one couplet with an abab, cdcd, efef, gg rhyme scheme and iambic pentameter*

   Conditions: *using a theme of their own choice.*

   Degree: *The sonnet will be judged by student judges on the following points: appropriateness of message and flow of thought.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *rule using*

4. Write Your Strategy Prescription:

Presentation

Read a typical Shakespearean sonnet. List its peculiar characteristics, i.e., 14 lines, 3 quatrains, 1 couplet, rhyme scheme: abab, cdcd, efef, gg, meter: iambic pentameter. Indicate that the students are going to learn to write such poems.

Choose a theme. Spend a class period writing a sonnet for your students. Point out ways to find rhyme, control meter, etc., as you proceed. Point out some errors you could have made and how you corrected them.

Point out the special message such poems carry. Illustrate with other examples of sonnets.

Practice

Test prerequisite concepts such as iambic meter, rhyme, quatrains, couplets, etc.

Assign students to read and correct several poorly written sonnets which have errors in rhyme or meter.

Assign students to write two or three sonnets, each on a different theme and in a different meter.

Provide detailed feedback after each attempt pointing out where it was correct or incorrect in form. Point out some common mistakes such as nonmetered lines, inappropriate rhyme schemes, and nonrhyming lines.

Evaluation

Assign students to write another sonnet on a theme of their choice.

Have the student-produced sonnets judged by student committees. Judge on both form and message.

Criteria: Provide each judge a checklist listing the form characteristics with a five-point scale for each. Also indicate criteria for judging the message.

Comments

Presentation indicates expected behavior and illustrates an existing sonnet. Actually writing a sonnet for your students helps them see some of the tricks involved. Merely reading a previously written sonnet does not let them see the actual problem solving process.

It is assumed that previous lessons dealt with meter, rhyme, etc. Before turning students loose to practice, assess their understanding of the concepts.

Practice involves presenting previously written sonnets to save time and to provide limited practice in identifying relevant characteristics. After, students are assigned to write several sonnets, each on a different theme.

Feedback helps them focus attention on correct application of the rules. Inappropriate procedures are also identified.

Do not allow poems written on themes assigned in class. Try to make writing a new assignment. An alternative would be to assign a new theme. Other elements could be restricted such as meter pattern to be used. This helps assure a new problem and prevents the student from merely rewriting a previously critiqued poem.

Note use of student judges and checklist.

WRITE YOUR OBJECTIVE AND STRATEGY, HERE

1. **Write Your Objective**
   Behavior:
   Conditions:
   Degree:
2. The Domain is:
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription:

Explain why you used a particular strategy.
(see pps. 48, 50 and 52.)

Presentation

Practice

Evaluation

GO TO P. 109.

STEP FOUR	WRITE A STRATEGY PRESCRIPTION Psychomotor Domain; Self-Paced Strategy

A simplified checklist of self-paced behaviors:

___ Does your objective require the student to initiate and pace an activity at his own speed by moving the body or a part of the body?

___ Do you want the student to contact, manipulate, control, or move a stationary object?

Self-Paced Strategy is appropriate when the student is at rest and he initiates the activity when ready. Typically, this brief behavior is associated with a student preparing to respond to a fixed object or static environment in a situation that permits him to move at his own rate of speed. Self-paced strategies underlie playing a note on the piano, typing a letter, writing, starting a plane, and rolling a bowling ball. Since the environment and objects are stable, the learner need be primarily concerned with consistency of response. Many classroom psychomotor behaviors are of this type.

Self-paced strategies can be applied to both discrete and continuous tasks. A discrete task is one which consists of a single movement like flipping a switch or pushing a button, or a series of single movements like typing. A continuous task is one which consists of an integrated movement sequence like swinging a golf club or cursive handwriting.

READ THE SAMPLE SELF-PACED OBJECTIVES ON THE FACING PAGE. THEN TURN TO P. 58.

Acknowledgement

The authors are grateful to Robert Singer who provided extensive detailed suggestions specifically for this book. The division into three psychomotor strategies was at his suggestion. Although many of the recommendations given are his, the authors naturally assume responsibility for the material represented as many extensive revision and editing was done to Dr. Singer's work and the biases presented may not adequately represent his original intent.

Many of the recommendations contained in this section are adapted from the following source: Merrill, M. David, "Psychomotor Paradigms" a chapter in M. David Merrill (Ed.) *Instructional Design: Readings*, Englewood Cliffs: Prentice Hall, 1971.

PSYCHOMOTOR DOMAIN, SAMPLE SELF-PACED OBJECTIVES

SAMPLE OBJECTIVE 1

Third grade students (audience) will write (behavior) the letters d, b, g, and p, using cursive style handwriting with a pencil on lined paper (conditions). Each letter will be well-formed and created with a single smooth stroke (degree).

The task involves learning to manipulate a pencil, hence it also involves control of a previously stationary object.

The student initiates the task when he is ready and can complete a given movement (letter) as fast or slowly as he wants. Obviously, there are limits on his response time.

Even though the task is to draw a single letter, it is continuous. As letters are strung together into words, the continuous nature of the task becomes even more apparent.

SAMPLE OBJECTIVE 2

Using the correct hand position (condition) typing class students (audience) will type (behavior) the letters A S D F and J K L on a standard typewriter keyboard (conditions). The student will be ready to proceed to the next objective when he can type all or some of these letters in any specified order without errors at a minimum rate of 3 letters per second (degree).

The task involves learning to operate a previously stationary object, the typewriter.

The student initiates the task when he is ready. While a criterion limit is specified, the machine does not pace the student; he paces himself, making this a self-paced task.

This is a discrete task, or rather, a series of discrete tasks in succession.

SAMPLE OBJECTIVE 3

Art students (audience) will use a one-quarter inch lettering brush (condition) to produce the gothic letters C D O and S (behavior). The letters will be of uniform width and well proportioned. Students will print ten of these letters in less than one minute (degree).

The task involves learning to operate a lettering brush which was a previously stationary object.

The student initiates the task when he is ready and moves at his own rate. Don't confuse a criterion limit with pacing. The brush does not require movement at any particular speed.

This is a continuous task in that forming each letter requires a self-correcting series of movements. Each stroke may be considered almost discrete. Hence, this task is borderline.

EVALUATION STRATEGIES FOR A PSYCHOMOTOR, SELF-PACED OBJECTIVE

Under conditions which resemble the "real world" situation as closely as possible, require the student to demonstrate the act. Make all of the observations necessary to assess his proficiency.

Because motor performances can be observed directly, it is often thought that adequate measurement of a motor act is relatively simple. However, several important factors should be considered as follows:

Judging Results: Many self-paced tasks involve manipulation of some object which results in some change in position or shape. One way to judge the adequacy of such performance is to measure the change produced in the object. Such factors as distance moved, accuracy of the change, adequacy of the resulting product all represent ways to assess the performance.

Judging Proficiency: Some self-paced tasks do not involve an object (dance steps, conducting music, etc.). In this case, it is necessary to judge the adequacy of the movement itself. Usually, movement can be judged as to speed, accuracy, and form Even when an object is moved or some product created, it is often desirable to judge form as well.

Checklist: Observation of psychomotor performance is usually improved if the observer is given a checklist which prompts him to observe all of the relevant factors involved. For inexperienced judges, you can generally expect adequate discrimination on perhaps five levels (e.g. excellent, good, average, fair, poor) on three or four factors. If you have too many categories or items on the checklist, the judge will become confused.

Two or More Judges: Whenever accurate observation is required, at least two judges should be used. An average of their ratings in each category generally provides an accurate picture of the performance. Don't overlook using student judges. Learning to judge others often improves their own performance.

Sliding Criteria: As students mature, their ability and level of performance on a given task increases. You should adjust your criteria of acceptable performance both in products and form according to the maturity and ability of your students. This might result in a different criterion of performance for different students. It is frequently good practice to have students compete against their own past performance rather than against their peers.

EXAMINE THE SAMPLE EVALUATION STRATEGY ON THE FACING PAGE. THEN, TURN TO P. 60.

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *Third grade students*

   Behavior: *will write the letters d, b, g, and p using cursive style handwriting*

   Conditions: *using pencil and lined paper, when directed.*

   Degree: *Each letter will be well formed, and created with a single smooth stroke.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *self-paced*

4. Write Your Strategy Prescription:

   Comments

Presentation

Practice

Evaluation

Directions: In cursive, write the following letter combinations on lined paper: db, gd, pg, dp, dpg, bgd, gdp, ppg, dbd.

Checklist: Rate form of each letter 1–5 on each of the following points: incomplete lines, proper placement in lines, well-formed tail, etc.

Watch each student write two or more letter groups. Rate his form 1–5 on each of the following: holding pencil correctly, smooth stroke, speed, etc.

Keep record of each student's scores; rate another sample of these letters after six weeks. Show each student how he is doing against his past performance.

Criteria: A good (or 3) rating will be considered acceptable at this point.

Note use of checklists on both product produced and form.

At this stage, only a teacher's rating will be used. Later on in the year, other students will be used as judges.

GO TO P. 60 FOR PRACTICE STRATEGIES.

PRACTICE STRATEGIES FOR A PSYCHOMOTOR, SELF-PACED OBJECTIVE

Under conditions where help and feedback are provided, the student should be required to repeat the performance until he can reliably demonstrate the specified proficiency level. Since the student and the situation are both stationary prior to the response, the emphasis in practice should be directed toward response consistency.

The following suggestions should improve the effectiveness of the practice session:

Overt Practice: Since the task to be learned involves moving the body, the student must actively (overtly) respond in the situation. Some simple self-paced tasks do not require extensive or intensive practice. They require just enough time to practice to reasonable execution, and then new or modified tasks are introduced. More complex tasks require considerable practice.

Feedback: An old adage says, "Practice makes perfect." However, unless a student has some information about how he is doing, practice alone will do little to improve performance. Some tasks have such feedback built in. (For example, after driving a golf ball, the learner can observe immediately whether it went down the fairway or sliced into the rough.) In other tasks, an external observer must provide information about the performance. (For example, a marksman shooting at a paper target requires an observer with binoculars or some one to retrieve the target to see how he did.)

The amount of improvement resulting from practice with feedback depends on how soon after responding the student knows how he did. If there is considerable delay, his improvement will be much slower than if the information is provided immediately.

Repeated Demonstration and Helps: During all stages of practice, the learner will benefit from seeing another demonstration of the performance following his attempts. For complex performances, it frequently aids to provide help to the student during his performance by calling attention to the relevant stimulus situations and helping him focus attention on them. Such help should be gradually eliminated so that the student does not become dependent on them.

Whole Versus Part Practice: Whenever possible, the student should practice the whole performance each time. Some self-paced tasks are so complex that it is desirable to segment the task and practice one segment, then add a second and practice both, and so forth until he is able to execute the entire behavior. The first segment to be practiced should usually be the last part of the sequence so that performing this act results in a change in the object being manipulated, hence, providing maximum feedback to the learner.

Speed/Accuracy Trade-Off: The student should usually practice the task the same as he would in the real situation. If both speed and accuracy are equally important in task performance, as in typing, both should be stressed during practice. If accuracy is of greater concern as in learning to write, then accuracy should be emphasized during practice. Tasks in which self-paced strategies are applied usually demand a heavier accentuation on accuracy rather than speed of movement.

Over-Practice: If a great deal of proficiency is to be shown in a difficult task, it should be practiced at great length. Retention is improved when acts are practiced past a criterion point of learning mastery. Over practice helps the learner to resist fatique, stress, and other disrupting conditions in the real situation.

EXAMINE THE SAMPLE PRACTICE STRATEGY ON THE FACING PAGE. THEN, TURN TO P. 62

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *Third grade students*

   Behavior: *will write the letters d, b, g, and p using cursive style handwriting*

   Conditions: *using pencil and lined paper, when directed.*

   Degree: *Each letter will be well formed, and created with a single smooth stroke.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *self-paced*

4. Write Your Strategy Prescription:

   Comments

Note overt practice.

Note helps in terms of dots to guide initial performance. These helps should be eliminated as soon as the student no longer needs them.

Task is segmented, individual letters first, then combinations.

Emphasis is on accuracy.

Presentation

Practice

Display: Sheets where individual letters appear as dotted forms.

Directions: Connect the dots using an even stroke to form the letter p (or d, or g, or b).

After 8 or 10 prompted trials, have student form letters where only beginning and direction-change dots appear. Finally, practice with no dots.

During initial trials, have well-formed samples available for instance comparison. After some practice, have them turn samples over and practice. After each letter, have them practice different letter groups.

Evaluation

Directions: In cursive, write the following letter combinations on lined paper: db, gd, pg, dp, dpg, bgd, ppg, dbd.

Checklist: Rate form of each letter 1-5 on each of the following points: incomplete lines, proper placement in lines, well-formed tail, etc.

Watch each student write two or more letter groups. Rate his form 1–5 on each of the following: holding pencil correctly, smooth stroke, speed, etc.

Keep record of each student's scores; rate another sample of these letters after six weeks. Show each student how he is doing against his past performance.

Criteria: A good (or 3) rating will be considered accpetable at this point.

GO TO P. 62 FOR PRESENTATION STRATEGIES.

PRESENTATION STRATEGIES FOR A PSYCHOMOTOR, SELF-PACED OBJECTIVE

Show the student how the act is to be performed using correct form, and, if possible, at the level of proficiency to be required by the student. Indicate to the student the proficiency level which he will be required to demonstrate following practice.

DEMONSTRATE: In order for the student to have a complete picture of the act he is to learn, he should see it performed in its entirety at the proficiency level he will be expected to acquire. Since many self-paced tasks are not complex, in some instances a demonstration can be presented in verbal form consisting of written directions, illustrations, or oral explanations.

POINT OUT RELEVANT CUES: When the act to be learned is complex, the student should see a demonstration during which special features of the act are called to his attention. (For example: special ways to hold equipment are noted, particular movements are isolated for observations, etc.) Devices should be used which enable emphasis of these special features.

INDICATE CRITERIA: If a checklist is to be used for judging the performance, this checklist should be given to the student and its use demonstrated. Call attention to each of the proficiency factors during the demonstration. If the criteria are extensive, it is sometimes wise to introduce only a few critical factors initially and then add refinements as practice proceeds.

MATURATION LEVEL: The classification must take developmental factors into consideration. Younger children need simple models and less complex, time-consuming directions. More general rather than highly precise performance behaviors may be expected of them due to maturational limitations.

EXAMINE THE SAMPLE PRESENTATION STRATEGY ON THE FACING PAGE, AND TURN TO P. 64

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *Third grade students*

   Behavior: *will write the letters d, b, g and p using cursive style handwriting*

   Conditions: *using pencil and lined paper, when directed.*

   Degree: *Each letter will be well formed, and created with a single smooth stroke.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *self-paced*

4. Write Your Strategy Prescription:

Comments

The product is Illustrated.

Form is demonstrated. If you write on the board or have the student watch from other than over the shoulder, you are really demonstrating different behavior than that desired.

Important aspects are stressed by checklist.

Incorrect examples are shown for comparison.

Presentation

Show the student examples of correctly formed letters.

Show him how to write them by allowing small groups of students to watch over your shoulder.

Show him the checklist and examples of poorly formed letters.

Review correct way to hold the pencil. Help individual children as necessary.

Practice

Display: Sheets where individual letters appear as dotted forms.

Directions: Connect the dots using an even stroke to form the letter p (or d, or g, or b).

After 8 or 10 prompted trials, have student form letters where only beginning and direction change dots appear. Finally, practice with no dots.

During initial trials, have well-formed samples available for instant comparison. After come practice, have them turn samples over and practice. After each letter, have them practice different letter groups.

Evaluation

Directions: In cursive, write the following letter combinations on lined paper: db, gd, pg, dp, dpg, bgd, gdp, ppg, dbd.

Checklist: Rate form of each letter 1–5 on each of the following points: incomplete lines, proper placement in lines, well-formed tail, etc.

Watch each student write two or more letter groups. Rate his form 1–5 on each of the following: holding pencil correctly, smooth stroke, speed, etc.

Keep record of each student's scores; rate another sample of these letters after six weeks. Show each student how he is doing against his past performance.

Criteria: A good (or 3) rating will be considered acceptable at this point.

GO TO P. 64 FOR ANOTHER SET OF SAMPLE STRATEGIES.

SAMPLE OBJECTIVE 2

1. **Write Your Objective**

   Audience: *Typing class students*

   Behavior: *use the correct hand position when typing the letters A, S, D, F and J, K, L*

   Conditions: *when using a standard typewriter keyboard.*

   Degree: *The student will be ready to proceed to the next objective when he can type all or some of these letters in any specified order without error, at a rate of three letters per second.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *self-paced*

4. Write Your Strategy Prescription:

Comments

It is assumed that a previous objective introduced the typewriter and its parts.

Presentation

Show the students correct hand position.

Type each of the letters showing how to strike the keys. Also show how the thumb strikes the space bar.

Indicate the criteria for this lesson and demonstrate the speed required. Demonstrate a timed test.

Stress importance of looking only at text, not at the keys or typed copy.

Procedure moves from single letter to series of letters to words. Self pacing is speeded by use of pacer (metronome).

Initial emphasis is on accuracy, then drill 5 introduced speed.

Feedback is produced by typed copy.

Practice

Drill 1: While all students sit at their typewriter have them press the key you call out in unison.

Drill 2: Have students type the letters, in order, FDSA JKL, then in reverse order. Repeat each drill until 3 correct attempts. Have each student correct each drill after he finishes.

Drill 3: Have students type alternate orders, such as FJDKSLA, etc.

Drill 4: Have students type lists of words and syllables made up of these letters.

Drill 5: Using a metronome, pace the typing of word lists.

Student can score own errors. Timed test allows determination of pace.

Evaluation

Give a series of 3 timed tests, each consisting of 20 words made up of combinations of these letters. Score is number of errors and letters per second.

Criterion: No errors; 5 letters per second.

NOW, WRITE OUT STRATEGIES FOR YOUR OWN OBJECTIVE.

WRITE YOUR OBJECTIVE AND STRATEGY, HERE

1. **Write Your Objective**
   Audience:
   Behavior:
   Conditions:
   Degree:
2. The Domain is:
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription

Explain why you used a particular strategy.
(See pps. 58, 60 and 62.)

Presentation

Practice

Evaluation

GO TO P. 109

STEP FOUR	WRITE A STRATEGY PRESCRIPTION **Psychomotor Domain; A Mixed-Pace Strategy**

A simplified checklist of **mixed-pace** behaviors:

___ Does your objective require the student be in motion as he interacts with a still object?

___ Does your objective require the student to be still (set) in preparation for interaction with an object in motion?

Mixed-Paced Strategy is appropriate where the situation is partially dynamic: (a) the student is in motion, but the object or situation is fixed (still), or (b) the student is fixed (set) and the object is in motion. Dancing a sequence of steps in predesignated tempo represents a performance in motion on a stable (fixed) platform. The baseball batter, on the other hand is in a state of preparation while the baseball (object) is pitched. Many industrial skills, recreational endeavors, and military assignments require the mixed-pace strategy.

Mixed-paced strategies can be applied to both discrete and continuous tasks. A discrete task for this strategy is one which requires a single response such as shooting at a moving target or shooting a lay-up in basketball. A continuous task is one which takes a coordinated series of movements with continual correction, such as driving a car.

Psychomotor strategies are cumulative. It is suggested that you also study the self-paced strategy for those components which may contribute to a mixed-pace task.

READ THE SAMPLE **MIXED-PACE** OBJECTIVES ON THE FACING PAGE, THEN, TURN TO P. 68.

ACKNOWLEDGEMENTS

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PSYCHOMOTOR DOMAIN, SAMPLE MIXED-PACE OBJECTIVES

SAMPLE OBJECTIVE 1

Early grade school children (audience) will hit a softball with a ball bat (behavior), when the ball is slow pitched through the strike zone (conditions). Acceptable performance is hitting one out of three balls. (degree).

The softball is in motion while the student is set ready to hit it at the critical moment, hence, this is a mixed-pace task.

The behavior involves a single swing of the bat which either hits or misses the ball, hence, this is a discrete task.

SAMPLE OBJECTIVE 2

The early grade school child (audience) will balance and ride (behavior) a two wheel bicycle (conditions) so that he can stay on a winding path 3 feet wide (degree).

The child and the bike are in motion while the path is stationary; hence, this task requires a mixed-pace strategy.

The behavior requires continuous balance and steering responses as well as peddling and/or braking, making this a continuous task.

SAMPLE OBJECTIVE 3

The 7th grade student (audience) will shoot (behavior) a basketball lay-up, unguarded by another student (condition). He will make 2 out of 3 shots (degree).

The basket is stationary, but the student, in motion, must throw the ball at the basket. This task requires a mixed-pace strategy.

The shooting behavior is a single response which causes the ball to pass through or miss the basket. Consequently, shooting the ball in a lay-up is a discrete task.

EVALUATION STRATEGIES FOR A PSYCHOMOTOR, MIXED-PACE OBJECTIVE

The student should be asked to demonstrate the performance several times, each time under a different condition representing the range he will encounter in the real world. His performance should be observed using appropriate checklists and other devices to improve the accuracy of the judgments.

Factors which should be considered in assessing mixed-pace psychomotor behavior are as follows:

JUDGING PERFORMANCE: As with self-paced strategy, (see p. 58 for reference) a mixed-pace task may require judging either a change in an object, or the motion itself, or both. A checklist indicating proficiencies and the use of more than one judge is advisable.

VARIETY OF SITUATIONS: Because either the performer or some object is in motion for mixed-pace strategies, there is usually considerable variation from one performance to the next. It is therefore advisable to evaluate the performance under a variety of conditions.

ELIMINATE SPECIAL CONDITIONS: If during practice, devices were used to help focus attention on relevant cues or to help the learner respond quickly enough, these should be eliminated so that the evaluation is measuring a "real world" performance.

EXAMINE THE SAMPLE EVALUATION STRATEGY ON THE FACING PAGE. THEN, TURN TO P. 70

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *Early grade school children*

   Behavior: *will hit a soft ball with a ball bat*

   Conditions: *when the ball is slow pitched through the strike zone.*

   Degree: *Acceptable performance is hitting one out of three.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *mixed-pace*

4. Write Your Strategy Prescription:

   Comments

Presentation

Practice

Evaluation

Stimulus: The instructor will pitch 10 slow balls across the plate.

Response: The youngster will be instructed to hit as many pitched balls as he can.

Criterion: 3 hits will be scored as acceptable.

At a later time, more variance will be introduced by including slow pitches, fast pitches, pitches out of the strike zone as well as in. For the initial objective, however, such variance was avoided on purpose.

At this stage, our concentration is on hitting the ball. Distance, placing, etc. will not be considered until much later.

GO TO P. 70 FOR PRACTICE STRATEGIES.

PRACTICE STRATEGIES FOR A PSYCHOMOTOR, MIXED-PACE OBJECTIVE

The student should attempt the desired performance in simplified standard situations which are gradually modified by increasing the variety and eliminating special helps until he can perform under an assortment of "real world" situations.

The following recommendations can increase the effectiveness of practice with mixed-pace tasks:

STANDARD PRACTICE: Practice should initially occur under a simplified, most probable situation. This practice should include overt response and immediate feedback. (See self-paced strategy.) If the task is complex, partial practice may be desirable. (See self-paced strategy.)

FEEDBACK: Because of the increased complexity of mixed-pace tasks, especially when the body is in motion, it is usually necessary that an external observer provide information to the student about his performance until he learns to attend to kinesthetic and other internal cues.

VARIATION: After an adequate amount of competence is shown, practice situations should be varied. In the mixed-pace strategy, the student should experience the many ways he might find himself in motion or those in which the object would be in motion.

TASK SIMPLIFICATION: One way to simplify the task is to slow the pace, moving the body or the object more slowly. As practice progresses, the pace should gradually be increased until it reaches real world levels. Simulation devices can facilitate this control for many tasks.

EMPHASIZING RELEVANT CUES: Because of the pace involved, it is not possible in many tasks for the learner to process helps during the response execution. In these cases, helps should be provided prior to the response execution. In both cases, these helps should gradually be eliminated so that the learner is attending to internal cues.

ATTENTION: Use techniques to help the learner concentrate on relevant cues and avoid distractions.

EXAMINE THE SAMPLE PRACTICE STRATEGIES ON THE FACING PAGE. THEN, TURN TO P. 72.

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *Early grade school children*

   Behavior: *will hit a soft ball with a ball bat*

   Conditions: *when the ball is slow pitched through the strike zone.*

   Degree: *Acceptable performance is hitting one out of three.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *mixed-pace*

4. Write Your Strategy Prescription:

   Comments

Feedback automatic: he hits or misses.

The stand simplifies the task. In drill 1, task has been changed to a self-paced task. When the self-paced task is mastered with variation, then a mixed-pace strategy is introduced.

Watching ball and correct form stressed throughout practice.

Presentation

Practice

Drill 1: Place ball on an adjustable flexible stand. Have the student practice knocking the ball of the stand. Practice with 5 or 6 balls at 4 or 5 various heights, then with a series of swinging at a different height.

Drill 2: From a short distance, pitch slow balls to the student while he practices hitting. As he masters one distance, move back until eventually you are at an appropriate distance. During both drills, stress watching the ball, correct follow through swing, and correct stance and bat holding.

Evaluation

Stimulus: The instructor will pitch 10 slow balls across the plate.

Response: The youngster will be instructed to hit as many pitched balls as he can.

Criterion: 3 hits will be scored as acceptable.

GO TO P. 72 FOR PRESENTATION STRATEGIES

PRESENTATION STRATEGIES FOR A PSYCHOMOTOR, MIXED-PACE OBJECTIVE

Demonstrate the skill for the student, illustrating a high level of proficiency. Indicate the level of proficiency he will be expected to acquire during instruction. Emphasize the critical stimulus events.

DEMONSTRATE: In order for the student to have a complete picture of the skill to be performed, he should see it performed at a high proficiency level. The demonstration should be repeated at the level he will be expected to acquire during the period of the instruction.

POINT OUT RELEVANT CUES: During this demonstration, his attention should be called to stimulus conditions which must be used in his performance. Since either an object or performer is in motion during this type of behavior, some device should be used to slow or stop the motion so critical features of the performance may be illustrated.

INDICATE CRITERIA: If a checklist is used to evaluate the performance, it should be given to the student at this time and its use demonstrated. There may be some value in having the student learn to judge performances before he undertakes the behavior himself.

MATURATION LEVEL: Mixed-pace strategies require a higher maturation level than do many self-paced strategies. In establishing criteria and demonstrating the behavior, be sure to consider the level of your students.

EXAMINE THE SAMPLE PRESENTATION STRATEGY ON THE FACING PAGE, AND TURN TO P. 74

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *Early grade school children*

   Behavior: *will hit a soft ball with a ball bat*

   Conditions: *when the ball is slow pitched through the strike zone.*

   Degree: *Acceptable performance is hitting one out of three.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *mixed-pace*

4. Write Your Strategy Prescription:

Comments

Complex behavior has been simplified for this beginning objective.

Demonstration stresses form and relevant cues like watching the ball.

Presentation

Show how to stand and hold the bat ready for a pitch.

Show how to swing and follow through.

Hit some balls. Show pleasure in hits, trying again when miss.

Stress importance of watching the ball.

Tell the child he will learn to hit at least 1 out of 3 slow pitches.

Practice

Drill 1: Place ball on an adjustable flexible stand. Have the student practice knocking the ball off the stand. Practice with 5 or 6 balls at 4 or 5 various heights, then with a series of swinging at a different height.

Drill 2: From a short distance, pitch slow balls to the student while he practices hitting. As he masters one distance, move back until eventually you are at an appropriate distance. During both drills, stress watching the ball, correct follow through swing, and correct stance and bat holding.

Evaluation

Stimulus: The instructor will pitch 10 slow balls across the plate.

Response: The youngster will be instructed to hit as many pitched balls as he can.

Criterion: 3 hits will be scored as acceptable.

GO TO P. 74 FOR ANOTHER SET OF SAMPLE STRATEGIES

SAMPLE OBJECTIVE 2

1. **Write Your Objective**

   Audience: *The early grade school child*

   Behavior: *will balance and ride*

   Conditions: *a two wheel bicycle*

   Degree: *so that he can stay on a winding path 3 feet wide.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *mixed pace*

4. Write Your Strategy Prescription:

Comments

Turning to maintain balance is a critical issue.

Checklist or criterion probably unnecessary for this task. He'll know when he can ride.

Like many psychomotor tasks, feedback is built in.

Early drills simplify the task by allowing child to concentrate on one part of the task at a time.

Training wheels provide help to simplify the task. Encourage the child not to ride off balance with a training wheel always on the ground, but rather to try and balance the bike.

A loose criterion is involved because of the built in feedback in the task itself.

Presentation

Show student how to ride. Point out how you turn into a fall to maintain balance. Slow way down and exaggerate this corrective maneuver.

Practice

Drill 1: Have child sit on bicycle while you hold it still. Have him practice turning into fall.

Drill 2: While someone slowly walks the bike, have the child steer while you stress turning into a fall.

Drill 3: Hold up rear of bike, have student practice braking and peddling.

Drill 4: With training wheels, have student practice riding until wheels don't catch his falls.

Drill 5: Remove training wheels and allow child to ride.

Evaluation

Have student negotiate winding path. If he rides off the path or is unable to maintain his balance, he needs more practice before being allowed on the street.

NOW, WRITE OUT STRATEGIES FOR YOUR OWN OBJECTIVE

WRITE YOUR OWN OBJECTIVE AND STRATEGIES, HERE

1. **Write Your Objective**
   Audience:
   Behavior:
   Conditions:
   Degree:
2. The Domain is;
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription:

Explain why you used a particular strategy.
(See P. 68, 70 and 72.)

Presentation

Practice

Evaluation

GO TO P. 109

STEP FOUR	WRITE A STRATEGY PRESCRIPTION Psychomotor Domain; An Externally-paced Strategy

A simplified checklist of **externally-paced** behaviors:

Does your objective require the student to execute a response or a series of movements while **he** and an **object** are in **motion**?

Is there **dynamic** movement **interaction** between the student, an object, and his immediate environment?

Externally-Paced Strategy is appropriate when both the student and the object are in motion during the performance of the activity. This highly complex and dynamic type of behavior is often witnessed in competitive sports, such as in rallying in tennis and handball. Another illustration would be a marksman on a boat being rocked by the waves aiming at a moving target such as a flying bird. The complexity of this task is apparent when one imagines how much easier it would be if it were mixed-paced in nature; that is, if either the bird of the boat were still.

The most common behaviors involving externally paced tasks are discrete in nature. While they involve a body in motion, the behavior usually consists of a discrete response such as hitting, throwing or catching a ball while running or moving. A continuous externally-paced task involves continual correction and interaction of both the object and the performer, such as surfing or jumping a wake while water skiing. Continuous externally-paced tasks are so complex that examples commonly taught in school are difficult to identify.

Psychomotor tasks are cumulative. It is suggested that you also study the self and mixed-pace strategies in connection with externally-paced tasks.

READ THE SAMPLE EXTERNALLY-PACED OBJECTIVES ON THE FACING PAGE THEN, TURN TO P. 78

ACKNOWLEDGEMENTS

The authors are grateful to Robert Singer who provided extensive detailed suggestions specifically for this book. The division into three psychomotor strategies was at his suggestion. Although many of the recommendations given are his, the authors naturally assume responsibility for the material represented since extensive revision and editing was done to Dr. Singer's work and the biases presented may not adequately represent his original intent.

Many of the recommendations contained in this section are adapted from the following source: Merrill, M. David, "Psychomotor Paradigms" a chapter in M. David Merrill (Ed.) *Instructional Design: Readings*, Englewood Cliffs: Prentice Hall, 1971.

PSYCHOMOTOR DOMAIN, SAMPLE EXTERNALLY-PACED OBJECTIVES

SAMPLE OBJECTIVE 1

High school football receivers (audience) will catch (behavior) an over-the-shoulder pass while running downfield (conditions). They will catch 1 out of 2 such passes when not closely defended (degree).

The behavior requires the receiver to be running while a ball is moving toward him through the air. He must adjust his motion so he can meet the ball at the key moment without stopping.

The catch is a discrete behavior. Adjustment in speed of movement and position is necessary to meet the ball, but the response itself is a catch or incomplete pass.

Most competitive sports involve some type of externally-paced discrete behavior. Ability to master this complex behavior separates outstanding players from average athletes.

SAMPLE OBJECTIVE 2

High school football backs (audience) will demonstrate effective broken field running (behavior) when 3 or more defending players are blocking their path (conditions). They will average a gain of 3 yards per play over a series of 10 or more plays (degree).

This behavior involves a moving player and 2 or 3 objects (other moving players). Hence, there is dynamic action between the player and defenders.

This represents a continuous task since the situation is constantly changing which requires dynamic external adjustment on the part of the back.

Only certain members of a team would be expected to master this complex behavior and some will not reach criterion.

SAMPLE OBJECTIVE 3

Young adults (audience) will mount and ride (behavior) a surf board on a large incoming wave (conditions). They will average 1 minute per ride before falling or losing the wave (degree).

The behavior involves a moving surf and moving body on a surf board. The surfer must meet the changing conditions by continually shifting his weight in order to keep the wave and maintain his balance.

A surf ride requires continual adaptation to ever changing conditions; hence, this is a continuous task.

EVALUATION STRATEGIES FOR A PSYCHOMOTOR, EXTERNALLY-PACED OBJECTIVE

Observe the performance under a variety of "real world" or closely simulated situations. Use appropriate checklists and other devices to assist with the observation. Keep a cumulative record extending over several "real world" performances.

Factors which should be considered in assessing externally-paced psychomotor strategies are:

JUDGING PERFORMANCE: Externally-paced behavior is judged by observing changes produced in the environment and by observing the motion of the performer. As with self-paced and mixed-paced strategies, this judgment will be better if it is done by two or more judges using checklists which indicate the important proficiency factors.

MULTIPLE OBSERVATIONS: Because of the variety of ways that the performer and the object involved can be in motion for any given task, it is important that the performance be observed under a variety of conditions on more than one occasion. In most instances, some type of cumulative record should be maintained.

ACCURATE SIMULATION: For some types of externally-paced tasks, it is possible to make adequate judgments about performance under simulated conditions. This option is especially important when expensive equipment would be required otherwise or when inadequate "real world" performance could cause danger to life or limb.

DIAGNOSTIC EVALUATION: Because of the complex nature of most externally paced tasks, poor performance on a component task may mean failure to master the whole. Rating sheets should be constructed to pinpoint component task performance.

EXAMINE THE SAMPLE EVALUATION STRATEGY ON THE FACING PAGE
THEN, TURN TO P. 80

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *High school football receivers*

   Behavior: *will catch*

   Conditions: *an over-the-shoulder pass while running down field.*

   Degree: *They will catch* **one** *out of* **two** *such passes when not closely guarded.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *externally-paced*

4. Write Your Strategy Prescription:

   Comments

Presentation

Practice

Evaluation

Best evaluation would be number of such passes caught in actual game situation.

Reasonable simulation involves scrimmage practice where a play can be executed and observed under a variety of conditions.

A coach should observe each attempt and indicate what components are weak.

Simulation here is very much like role playing the "real world" event.

Two or more coaches or a coach and team member may improve reliability of judgment.

GO TO P. 80 FOR PRACTICE STRATEGIES

PRACTICE STRATEGIES FOR A PSYCHOMOTOR, EXTERNALLY-PACED OBJECTIVE

After mastering the component tasks, the learner should attempt the desired performance in situations at first simplified, then gradually modified, until he can perform under a variety of "real world" conditions.

The following recommendations can increase the effectiveness of practice with externally-paced tasks:

Test Component Skills: Externally-paced tasks are usually a complex of several subskills. Prior to practice on the whole tasks, evaluate the learner's ability to execute each of the component skills. If he has not acquired them, he should practice until he is ready for the more complex behavior using the recommendations given for self-paced and mixed-paced strategies.

Whole Versus Part Practice: Unlike either self-paced or mixed-paced tasks, externally-paced tasks are so complex that practice on component parts is almost always necessary before practicing the whole performance. Each part should be practiced separately. Then, the parts should be put together by adding segments.

Standard to Varied Practice: Practice should initially occur in a simplified, most probable situation. This practice should include overt response and immediate feedback (see self-paced strategy). After an adequate amount of competence is shown, practice situations should be varied. In the externally-paced tasks, both the person and the objects can be in motion in a variety of ways (see mixed-paced strategy).

Task Simplification: Externally-paced tasks can be simplified by stopping the motion of either the object or the person, thereby reducing the performance to mixed-pace behavior. Further simplification can be accomplished by slowing the pace as described for the mixed strategy.

Simulation: Because of the complexity of externally-paced tasks, it is frequently desirable to simulate a "real world" situation for control and simplification of the various task components. Simulation permits control over variation of the motion or persons or objects, provides a means for emphasizing relevant cues, and allows either of the two kinds of pace to be slowed down.

Attention: Because of the complex pacing involved in externally paced tasks, it is important to assist the learner to concentrate on the cues given in the task.

EXAMINE THE SAMPLE PRACTICE STRATEGY
ON THE FACING PAGE.
THEN, TURN TO P. 82

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *High school football receivers*

   Behavior: *will catch*

   Conditions: *an over-the-shoulder pass while running down field.*

   Degree: *They will catch* **one** *out of* **two** *such passes when not closely guarded.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *externally-paced*

4. Write Your Strategy Prescription:

   Comments

Both running and catching under easier conditions are necessary prerequisites to this task.

Drills 1 and 2 change the task to mixed-pace task where the object and then the learner are stopped. Drill 3 is externally-paced in standard condition. Drill 4 adds variety by confusing the situation with a defender.

A coach should observe every attempt and point out where timing, form, etc. could be improved.

Presentation

Practice

Test student's ability to catch a pass when set (not running), both when facing the quarterback and when facing away.

Drill 1: Suspend the football in a sling. Have the runner run, jump and snatch the football from its position. Stress timing, appropriate ball watching, etc.

Drill 2: Have the receiver practice catching over-the-shoulder passes while set. Back to greater distances as he acquires knack.

Drill 3: Have receiver run and receive over-the-shoulder passes. Gradually increase distance.

Drill 4: Put a defender on receiver and have him attempt reception while dodging defender.

Evaluation

Best evaluation would be number of such passes caught in actual game situation.

Reasonable simulation involves scrimmage practice where a play can be executed and observed under a variety of conditions.

A coach should observe each attempt and indicate what components are weak.

GO TO P. 82 FOR PRESENTATION STRATEGIES

PRESENTATION STRATEGIES FOR A PSYCHOMOTOR, EXTERNALLY-PACED OBJECTIVE

Demonstrate the behavior as it should be performed. Indicate the level of proficiency the student will be expected to attain. During the demonstration, isolate the stimulus events critical to the performance.

DEMONSTRATE: To clearly illustrate the behavior, illustrate the entire performance and then some of the various component skills. To simplify the demonstration and help the student see the components, hold either the performer or the object still while the other is in motion. Because of the variations in motion possible, several demonstrations should be made.

POINT OUT RELEVANT CUES: During the performance, point out relevant stimulus cues. This may require devices which can slow or stop the performance to emphasize relevant cues.

INDICATE CRITERIA: Show the student how the performance will be judged and if a checklist is involved, how it is applied.

MATURATION LEVEL: The complexity of externally-paced strategies usually requires a rather high level of physical maturity. Be sure to carefully analyze your student's readiness to undertake such tasks.

EXAMINE THE SAMPLE PRESENTATION STRATEGY ON THE FACING PAGE. THEN, TURN TO P. 84.

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *High school football receivers*

   Behavior: *will catch*

   Conditions: *an over-the-shoulder pass while running down field.*

   Degree: *They will catch* **one** *out of* **two** *such passes when not closely guarded.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *externally-paced*

4. Write Your Strategy Prescription:

Comments

Slow motion helps isolate critical parts of the behavior.

Presentation

Show a series of mediated examples illustrating an over-the-shoulder pass reception.

Use slow motion and point out the critical elements of timing judging, jumping, etc. involved in the catch.

Discuss each element and stress its importance.

Stress the edge being able to catch such a pass gives your team over the competition.

Practice

Test student's ability to catch a pass when set (not running), both when facing the quarterback and when facing away.

Drill 1: Suspend the football in a sling. Have runner run, jump and snatch the football from its position. Stress timing, appropriate ball watching, etc.

Drill 2: Have the receiver practice catching over the shoulder passes while set. Back to greater distances as he acquires knack.

Drill 3: Have receiver run and receive over the shoulder passes. Gradually increase distance.

Drill 4: Put a defender on receiver and have him attempt reception while dodging defender.

Evaluation

Best evaluation would be number of such passes caught in actual game situation.

Reasonable simulation involves scrimmage practice where a play can be executed and observed under a variety of conditions.

A coach should observe each attempt and indicate what components are weak.

GO TO P. 84 FOR ANOTHER SET OF SAMPLE STRATEGIES.

SAMPLE OBJECTIVE 2

1. **Write Your Objective**

   Audience: *High school football backs*

   Behavior: *will demonstrate effective broken field running*

   Conditions: *when three or more defending players are blocking their paths.*

   Degree: *They will average a gain of 6 yards per play over a series of 10 or more plays.*

2. The Domain is: *psychomotor*

3. The Appropriate Strategy is: *externally-paced.*

4. Write Your Strategy Prescription:

Comments

Slow motion helps isolate critical parts of this very complex behavior.

Drills 1 and 2 change the task to a mixed-pace task by stopping movement of blockers or back while the other is still in motion.

Situation is gradually made more complex by addition of more defenders.

Simulation is like role playing the real world event.

Two or more official observers can improve feedback. Recording the event allows observation and analysis over and over, including slow motion.

Presentation

Show a series of mediated examples illustrating broken field running.

Use slow motion and point out critical elements such as faking, sidestepping, jumping, etc.

Discuss each element and stress its importance.

Point out the strength broken field running gives a team.

Practice

Pretest running, proper holding of football, faking, sidestepping a blocker, etc. Drill on weak aspects.

Drill 1. Place three or four dummies or sandbags on the field and have the back run a zig-zag pattern through these obstructions. Stress various critical moves during this practice.

Drill 2. Have back stand still and try to dodge a tackler by sidestepping or faking.

Drill 3. Have back run and dodge one defender.

Drill 4. Add 1 defender, then 2, while back practices broken field running.

During all practices, point out ways back could improve his pattern. Allow him to watch himself if possible.

Evaluation

Best evaluation would be yards gained per attempt in actual game situation.

Reasonable simulation involves scrimmage practice where the play can be executed and observed under a variety of conditions.

Every attempt should be carefully observed or recorded for diagnosis of the performances.

NOW, WRITE OUT STRATEGIES FOR YOUR OWN OBJECTIVE

WRITE YOUR OWN OBJECTIVE AND STRATEGIES, HERE

1. **Write Your Objective**
   Audience:
   Behavior:
   Conditions:
   Degree:
2. The Domain is:
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription:

Explain why you used a particular strategy. (See pps. 78, 80 and 82.)

Presentation

Practice

Evaluation

GO TO P. 109

STEP FOUR	WRITE A STRATEGY PRESCRIPTION Affective Domain; Motivation or Interest Strategy

A simplified checklist of **motivation or interest** behaviors:

— Do you want to increase motivation as evidenced by a student's persistance in working at a task?

— Do you want to promote interest as evidenced by a student's volunteering to work at some task?

Affective behavior can be inferred from a person's approach and avoidance behaviors. While many factors can complicate such choices, the following oversimplified description should assist in planning affective strategies.

When a person likes or desires a particular thing or event, he makes an effort to obtain or seek after the thing that attracts him. This type of behavior is called approach. On the other hand, when a person does not like or fears a particular thing or event, he tries to prevent contact with it. This type of behavior is called avoidance. When a person really wants to do something, we say he is motivated; in other words, he demonstrates an approach behavior. If a person who is not forced in some way, persists in working at a task or goes back to a particular kind of event again and again, we say he is interested in this event; or in other words, he demonstrates an approach behavior. An affective objective identifies particular approach behaviors from which we can infer interest or motivation in particular objects or events.

When we attempt to promote interest or motivation, one objective should not be designed to have all students equally motivated or adopt common interests. Rather, they are to modify the negative extremes of behavior, to promote interest in something where there was no interest before, to motivate in socially acceptable ways where existing motives are disruptive or socially unacceptable, and to help all children empathize with the acceptable motives and interests of others.

READ THE SAMPLE MOTIVATION OR INTEREST OBJECTIVES ON THE FACING PAGE. THEN, TURN TO P. 88

Acknowledgements

The strategy described in this section is an adaptation of Contingency Management, as described by Lloyd Homme. If you want a more detailed presentation of these procedures, it is suggested that you consult the following source: Homme, Lloyd M. *How to Use Contingency Contracting in the Classroom*. Champaign, Illinois: Research Press, 1969.

The procedures for testing motivation or interest and some of the illustrations are adapted from the following source: Lee, Blaine and Merrill, M. David, *Writing Complete Affective Objectives: A Short Course*. Belmont, California: Wadsworth, 1972.

The authors gratefully acknowledge the contributions of Robert Wagner and the "Good Group" for their many suggestions, some of which have been incorporated in the affective strategies presented.

AFFECTIVE DOMAIN, SAMPLE MOTIVATION OR INTEREST OBJECTIVES

SAMPLE OBJECTIVE 1

High school biology students (audience) will demonstrate an increased interest in biology by coming to class early (behavior). The teacher will leave the room open so they may come in early, but will not ask them to and will not provide any special awards for students so doing (conditions). The objective will be considered accomplished if an average of one third of the students come early throughout the year and 80% come early at least once (degree).

This is a volunteer situation where students have a free choice and elect to come. Coming early is used to infer increased interest in the topic.

Note that the objective includes a statement indicating the interest inferred, i.e., "increased interest in biology."

SAMPLE OBJECTIVE 2

High school music appreciation students (audience) will demonstrate an increased interest in classical music by selecting a higher proportion of classical records (behavior) from the record collection. The selections must be made during a free hour when the students can listen to the music on headphones while they study. The collection must include a variety of pop, evergreen, and classical selections (conditions). Success will be indicated if the average proportion of classical to pop and evergreen increases from a ratio of 1 in 20 to at least a ratio of 1 in 10 (degree).

This represents a free choice situation from which increased interest is inferred.

If the student is assigned to listen to a record, it should not be included in either the base statistic or the behavior used to measure change.

The 1 in 20 measure was base line gathered prior to beginning a unit on classical music.

SAMPLE OBJECTIVE 3

Junior High School algebra students (audience) will become more motivated to work algebra problems. They will show this increased motivation by completing (behavior) more of the "fun options" suggested at the end of each unit. These options consist of games and puzzles using the principles taught in the unit. Students are not assigned these options, but can find out how well they did by requesting to see the teacher's answer key (conditions). If the average number of students working the fun options reaches 50%, the objective will be considered accomplished.

Persistence by voluntarily engaging in more problem solving is used to infer increased motivation.

When fun options are assigned, they should not be counted toward the criterion or in determining the base line data.

EVALUATION STRATEGIES FOR AN AFFECTIVE, MOTIVATION OR INTEREST OBJECTIVE

On a number of occasions, observe a student's persistence in working at a task or his self-initiation of work on a particular kind of task when specified reinforcing events no longer depend on task involvement.

In observing situations from which you can infer motivation or interest change, consider the following:

HIGH PROBABILITY APPROACH BEHAVIOR: Identify a number of high probability approach behaviors from which you can infer the desired interest or motivation. An approach behavior is a choice to engage in some activity or persistence in working at a particular task. High probability means a situation which is likely to occur frequently or in the everyday experience of the student. Since a pattern of approach is a better indicator than a single observation, identify a number of different situations.

FREE CHOICE, NO-CUE TEST SITUATION: Describe a test situation in which the approach behaviors identified can be exhibited. Real world situation are best, but simulated or self-report situations can also be used. The situation should contain at least two alternatives, one of which is an instance of an approach behavior. The choice should be free. If a teacher has previously expressed a preference in a given situation, then the choice is no longer free. Also, if cues within the test indicate that it is a test of motivation or interest, then it is a cued situation.

CRITERIA: Establish a base line from the choices made by a student or group of students prior to their engaging in instruction designed to increase their motivation or interest. The criteria of change should be realistically compared to this base line. In class situations, one measure is the number of students who demonstrate the desired approach behaviors. If more demonstrate approach after the training than before, then you have produced some change in interest or motivation. A single choice is very reliable. Inferences about motivation or interest change should be based on trends observed over several choice situations. These may be spread over days or weeks.

EXAMINE THE SAMPLE EVALUATION STRATEGY ON THE FACING PAGE. THEN, TURN TO P. 90.

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *High school Biology students*

   Behavior: *will demonstrate an increased interest in Biology by coming to class early.*

   Conditions: *The teacher will leave the room open, but will not ask them nor provide special rewards for students so doing.*

   Degree: *An average of one third of the students will come early throughout the year, and 80% will come early at least once.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *motivation or interest*

4. Write Your Strategy Prescription:

   Presentation

   Practice

   Evaluation

   Announce that the room will be available early.

   Keep a record (without telling the students) of the number who come early.

   If this number increases as the semester proceeds, you will have a basis for inferring increased interest.

   Comments

   Be sure no grades or credit are given for coming early.

   Do not tell students this is a way to measure interest.

   If attendance drops at these early sessions you had better examine your contracting situation.

GO TO P. 90 FOR PRACTICE STRATEGIES.

PRACTICE STRATEGIES FOR AN AFFECTIVE, MOTIVATION OR INTEREST OBJECTIVE

Set up practice conditions so that participating in a particular reinforcing event depends on a student's accomplishment of a specified learning activity.

Motivation or interest is increased when a student successfully engages in a particular task. The most successful procedure yet identified for insuring involvement consists of establishing a contract with each student whereby a certain amount of involvement with the task results in an opportunity for activity the student finds rewarding. The following suggestions will assist you to establish such contracts.

A CAREFULLY DEFINED TASK: For a contract system to operate successfully, it is important that a given task be carefully defined and segmented into sections a student can complete in a short period. The length of this period depends on the age of the student, previous experience with the task, difficulty of the task, and other factors. It is better to identify task segments by the number of problems worked, the number of repetitions of a drill, etc., rather than by the amount of time spent. The type of practice involved depends on the kind of behavior being taught. The affective strategy to promote motivation or interest is always used in addition to an appropriate cognitive or psychomotor strategy.

REINFORCING EVENTS: Given two activities, a student will usually prefer one to another. Contracting is based on the fact that all of us will engage in less desirable activity if, as a result, we can engage in a desirable activity. The amount and kinds of reinforcing events available to the student should be carefully specified. He should be told how much and what kind of reward activity will be available for completing each task segment.

Objects or events of high reward value for one student may not be rewarding to another. Motivation and interest can be significantly increased only when they are promoted on an individual basis. You should carefully analyze your students and identify highly valued activities which you can make available to each one according to your resources and situation. Not only should a number of different reinforcing events be available for a class of students, but several alternative reinforcing events should be available for individual students.

CONTRACTS: The following considerations will make reward contracts more successful:

1) Always allow the student to engage in the reinforcing activity immediately following completion of the task segment on which the reward depends.
2) Make the reinforcement depend on accomplishment rather than on obedience.
3) Be sure the sequence is first work on the task, and then engagement in the reinforcing activity.
4) Be sure the contract is fair. A small amount of reinforcement activity for a large amount of task activity or a large amount of reinforcing activity for a small amount of task completed, is not fair and will not work.
5) Be sure the student understands the agreement and be sure to follow through every time.
6) Be sure the contract is positive. Do not make contracts which say, unless such and such is accomplished, you will be punished.

EXAMINE THE SAMPLE PRACTICE STRATEGY ON THE FACING PAGE. THEN, TURN TO P. 92

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *High school Biology students*

   Behavior: *will demonstrate an increased interest in Biology by coming to class early.*

   Conditions: *The teacher will leave the room open, but will not ask them nor provide special rewards for students so doing.*

   Degree: *An average of one third of the students will come early throughout the year, and 80% will come early at least once.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *motivation or interest*

4. Write Your Strategy Prescription:

   Comments

It is important to carefully define each study task. Be sure they are not too long so the student will have time to engage in the quest projects.

Have sufficient variety of quest projects so that each student can find one that interests him.

Presentation

Practice

Divide the test and other study materials into small segments, each with study questions and exercises. Each segment should require less than 30 minutes for the average student to complete.

Arrange a number of exciting quest projects, such as studying mitosis with a microscope, looking for microbes of some kind, etc.; growing cultures; photographing plant growth, raising rats and testing various microorganisms; study of synthetic light; etc.

Agree with students that completion of a study segment enables them to work on one of the quest projects for the remainder of the hour.

Announce that the room will be open early for those who want to undertake another quest project outside of class. Indicate that no extra credit will be given. "They're just for fun."

Evaluation

Announce that the room will be available early.

Keep a record (without telling the students) of the number who come early.

If this number increases as the semester proceeds, you will have a basis for inferring increased interest.

GO TO P. 92 FOR PRESENTATION STRATEGIES

PRESENTATION STRATEGIES for an AFFECTIVE, MOTIVATION or INTEREST OBJECTIVE

Conduct an open discussion as to why the particular interest or motivation is important. Do not indicate that you will measure the student's interest or motivation change. Do not indicate the test situations which will be used.

OBJECTIVES: Socially acceptable and desirable motivations and interests should be carefully selected and justified. Affective objectives should be specified for guiding instructional and evaluation activities. These motivations and interests should be discussed with the student, but if you intend to evaluate a student's change in motivation or interest, don't tell him when and how he will be observed, or it will not be possible to obtain a valid measurement.

DO NOT INDICATE YOUR OBJECTIVE: Real motivation and interest are often directed by involuntary individual emotional responses. When a person knows he is supposed to demonstrate a particular interest, however, he can "fake it" by acting "as if" he were interested if he wants to please the teacher, or refuse to act appropriately if he wants to aggravate the teacher. To evaluate a person's underlying motivation or interest under these conditions is impossible.

DISCUSSION: You should engage in free and open discussion with your students concerning a particular motivation or interest. You should feel free to express your own biases. You should also point out the desirability of a variety of different interests; the importance of different motivations. Socially undesirable interests and motivations should also be discussed in a free, open discussion. However, if you want to measure a change in your students, don't bias them by telling them when and how you will assess this change.

GRADES: You should never grade a student on his motivation or interest change.

EXAMINE THE SAMPLE PRESENTATION STRATEGY ON THE FACING PAGE. THEN, TURN TO P. 94.

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *High school Biology students*

   Behavior: *will demonstrate an increased interest in Biology by coming to class early.*

   Conditions: *The teacher will leave the room open, but will not ask them nor provide special rewards for students so doing.*

   Degree: *An average of one third of the students will come early throughout the year, and 80% will come early at least once.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *motivation or interest*

4. Write Your Strategy Prescription:

Comments

The flash and enthusiasm present in this discussion will do much to help you accomplish your objective.

Obviously you don't show your objective to your students.

Presentation

Discuss the importance of Biology as a field.

Show some of its outstanding contributions to mankind.

Indicate your own enthusiasm for the field and why.

Express the desire that your students will develop an interest.

DO NOT *tell them that their interest will be measured by coming early to class.*

Practice

Divide the text and other study materials into small segments, each with study questions and exercises. Each segment should require less than 30 minutes for the average student to complete.

Arrange a number of exciting quest projects, such as studying mitosis with a microscope, looking for microbes of some kind, etc.; growing cultures; photographing plant growth; raising rats and testing various microorganisms; study of synthetic light; etc.

Agree with students that completion of a study segment enables them to work on one of the quest projects for the remainder of the hour.

Announce that the room will be open early for those who want to undertake another quest project outside of class. Indicate that no extra credit will be given. "They're just for fun."

Evaluation

Announce that the room will be available early.

Keep a record (without telling the students) of the number who come early.

If this number increases as the semester proceeds, you will have a basis for inferring increased interest.

GO TO P. 94 FOR ANOTHER SET OF SAMPLE STRATEGIES

SAMPLE OBJECTIVE 2

1. **Write Your Objective**

   Audience: *High school music appreciation students*

   Behavior: *will demonstrate an increased interest in classical music by selecting a higher proportion of classical records from the record collection.*

   Conditions: *The selection must be made during a free hour when students can listen to music on head phones as they study; the collection must include a variety of pop, evergreen and classical selections.*

   Degree: *The average proportion of classical to pop and evergreen must increase from a ratio of 1:20 to at least 1:10.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *motivation or interest*

4. Write your Strategy Prescription:

Comments

Enthusiasm here is important. A repeat or variation of this idea should occur several times throughout the semester.

Don't *show students your objective. Be sure each task is specific and carefully defined. Be sure it can be completed in the time allowed.*

Be sure there are sufficient options to meet the interests of all students. Allow free choice. Don't force a student into an option he doesn't want.

Be sure no mention of kind of selection is made in class.

Let students feel this is their own business; actually, it is.

Don't grade choices.

Presentation

Describe the power and beauty of classical music.

Indicate your own interest, when you like to listen and why.

Express hope that students will develop an interest.

Do Not *indicate that study hour records are being monitored or will be used to measure interest.*

Practice

Divide study materials into small segments, each consisting of materials to read; to listen; to see, etc., with accompanying questions or exercises. Be sure each segment requires 30 minutes or less.

Arrange for students who complete each segment to listen to music of their choice. Be sure the collection includes all their favorites plus yours. An option would be to allow a jazz combo or singing group to practice following completion of their work.

Make a contract with each student. Work first, then fun.

Announce the availability of music in the study hall. Describe checkout procedures.

Evaluation

Be sure students know they can check out records and listen to music during study hall.

Keep a record of the selections checked out.

Figure out the proportion each week.

The proportions should improve as the semester continues.

Don't tell students a record is being kept.

NOW, WRITE OUT STRATEGIES FOR YOUR OWN OBJECTIVE.

WRITE YOUR OWN OBJECTIVE AND STRATEGIES, HERE

1. **Write Your Objective**
   Audience:
   Behavior:
   Conditions:
   Degree:
2. The Domain is:
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription:

Explain why you use a particular strategy.
(See pps. 88, 90 and 92.)

Presentation

Practice

Evaluation

GO TO P. 109

STEP FOUR	WRITE A STRATEGY PRESCRIPTION Affective Domain; Attitude or Value Strategy

A simplified checklist of **attitude or value** behaviors:

Does your objective specify a change in values or attitudes as evidenced by the activities or situations a student chooses when he doesn't know he is being observed?

Attitudes and values are very complex sets of behavior which include cognitive behaviors, psychomotor behaviors, as well as emotions and feelings. Part of acquiring an attitude or value involves knowing the concepts involved. There are three levels at which a student can express attitude or value behavior. Level one is verbal expression wherein he accepts a given attitude or value; level two is reported behavior where he tells what he would do in a given situation; level three is what he actually does in a given situation. All three levels are probably necessary to affirm a student's attitude or value. Since the first two levels can readily be faked, it is crucial during evaluation that the student be unaware of which situations are to be used to evaluate attitudes when attitudes are being observed.

When we attempt to promote a given attitude or value, affective objectives should not be designed to get all children to accept the same values and attitudes. Rather, we should promote a variety of socially acceptable attitudes and values. Attitude change should be aimed at helping persons with socially unacceptable attitudes or values develop a variety of attitudes or values within the acceptable range set by society.

READ THE SAMPLE **ATTITUDE OR VALUE** OBJECTIVES ON THE FACING PAGE. THEN, TURN TO P. 98.

ACKNOWLEDGEMENTS

The suggestions for measuring attitude and values are adapted from the following source: Lee, Blaine and Merrill, M. David, Writing Complete Affective Objectives: A Short Course. Belmont, California: Wadsworth, 1971.

The authors gratefully acknowledge the contributions of Robert Wagner and the "Good Group" for their many suggestions, some of which have been incorporated in the affective strategies presented.

AFFECTIVE DOMAIN, SAMPLE ATTITUDE OR VALUE OBJECTIVES

SAMPLE OBJECTIVE 1

Sixth grade students (audience) will come to value an unpolluted environment. Their concern for pollution will be measured by the way they discard papers, wrappers, etc. (behavior). On an outing where they are given individually wrapped candy and do not know that their paper discard behavior is being observed (conditions), the number of wrappers thrown on the ground will be significantly less than during a baseline outing (degree).

Paper discard behavior provides a good measure of attitude toward the environment and pollution.

The degree is an average for a group. Individual behavior is more difficult to observe.

If someone in authority says, "Remember to put papers in the trash," your measure will be somewhat biased. Make it a free choice situation.

SAMPLE OBJECTIVE 2

Elementary school students (audience) will develop an attitude of respect for the American Flag. They will demonstrate their respect by properly folding and storing the flag and by holding their hands over their hearts whenever the flag passes or is presented (behavior). The attitude of various students will be observed when they hoist and retrieve the flag and when the flag is presented during assemblies. The students must have no knowledge of the check on their behavior (conditions). The objective will be considered accomplished if an average of 90% of the class remembers to show proper respect (degree).

SAMPLE OBJECTIVE 3

High school students (audience) will show increased sportsmanship by refraining from boos and hisses (behavior) at athletic contests (conditions) and by applauding (behavior) outstanding accomplishments of the other team in these game situations (conditions). A significant decrease in the number of boos and an increase in the amount of applause for the other team will indicate accomplishment of the objective (degree).

EVALUATION STRATEGIES FOR AN AFFECTIVE, ATTITUDE OR VALUE OBJECTIVE

In natural or contrived situations involving frequently occuring activities consistent with or opposed to the new attitude or value, observe the student's choice behavior without his being aware and without providing cues as to the desired or expected choice.

Verbal Report: It is possible, but difficult, to obtain valid measures of a given attitude or value by verbal report. A measure which merely asks the student whether or not he subscribes to a given attitude or value is the most unreliable of all measures for several reasons. First, asking the question tells the student he is being asked his position relative to a given value. If he wants to please the questioner, he will answer according to what he thinks the questioner wants, rather than according to his feelings. Mere verbal expression does little to measure how a student would act were he required to take a position with respect to the attitude or value under question.

Reported Behavior: Asking the student to state how he would act in described situations can be a more reliable measurement, if the following conditions are met. First, the student is led to believe that the instrument is for some purpose other than to measure his attitudes or values. Second, the student is unaware of which value or attitude is being assessed. Third, the student makes his choice for specific situations rather than for abstract statements. Fourth, the descriptions are worded without clues about the desired or anticipated response.

Observed Behavior: Observing a student's choices without his knowledge is the most reliable evaluation procedure for attitude and value behavior. The following suggestions may assist in establishing such observation conditions.

First, identify those situations which, if chosen, would provide the student the possibility to indicate his position relative to the value or attitude under question. Be sure that the situations identified are likely to occur with some frequency.

Second, be certain that a given situation presents the student a choice where alternatives would indicate different positions relative to the value.

Third, be sure the student has a free choice. If, during the presentation, the situation was described and the alternatives identified relative to the value or attitude, or if the student is aware that he is being observed, then there is no assurance of free choice. Clues hidden in the situation itself may give some indication of the preferred choice and constrain the decision.

Criteria: A single choice is not adequate to infer adoption of a given attitude of value. Several choices in several different situations assure a more reliable inference.

It is usually inappropriate to award grades or other sanctions for one value position over another. The purpose of observation should be to evaluate the effectiveness of the experiences employed, rather than to give awards to the students for conforming.

EXAMINE THE SAMPLE EVALUATION STRATEGY ON THE FACING PAGE. THEN, TURN TO P. 100

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *Sixth grade students*

   Behavior: *will come to value an unpolluted environment. Their concern for pollution will be measured by the way they discard papers, wrappers, etc.*

   Conditions: *on an outing where they are given individually wrapped candy and do not know that their paper discard behavior is being observed.*

   Degree: *The number of papers thrown on the ground will be significantly less that during a "baseline" outing.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *attitude or value*

4. Write Your Strategy Prescription:

   Comments

Presentation

Practice

Evaluation

Plan two outings as part of your other objectives. These can be to public monuments or facilities, etc.

During each outing, make individually wrapped candy or gum available to your students.

Without being obvious, count the number of wrappers thrown on the ground or floor.

Do Not *tell students this is measuring their attitude toward pollution.*

Do Not *remind students to use proper receptacles for waste disposal.*

The first outing should occur prior to practice and presentation. The second after.

This is observed behavior.

A significant improvement (less papers on the ground) from the first to the last will indicate progress toward your objective.

If students are reminded or told the purpose of the candy, you will not have an unbiased observation.

GO TO P. 100 FOR PRACTICE STRATEGIES.

PRACTICE STRATEGIES FOR AN AFFECTIVE, ATTITUDE OR VALUE OBJECTIVE

Provide opportunities for the student to participate in group activities or simulations where accomplishing a desirable group goal depends on his adopting (at least temporarily) the value system or attitudes of the group. Provide the necessary cognitive information concerning the attitude or value by using the appropriate cognitive strategies. (See other sections of this manual).

COGNITIVE PRESENTATION: When teaching values and attitudes, there is usually a considerable amount of cognitive understanding necessary before a student can rationalize a given value or attitude position. Consequently, teaching values frequently involves teaching cognitive information. The cognitive strategies described elsewhere in this manual should be used for teaching this cognitive information about a given attitude or value.

VARIETY OF EXPERIENCES: Attitude change is usually a slow process involving a variety of experiences with the new attitude or value, which is not difficult to realize considering the old attitude may have been held for some time and reinforced on numerous occasions. It is important, therefore, that each student have a variety of experiences, each designed to promote adoption of the new attitude or value.

GROUP PARTICIPATION: Perhaps the most successful way to change an attitude or value is to put the student in a situation where he is required to adopt the value or attitude in order to accomplish a crucial group goal. This is the "act as if" phenomenon. All of us have observed that a group of people holding very different views suddenly adopt a common code when faced with a crisis.

SIMULATION: A student's attitudes or values can be significantly affected in carefully designed role playing or simulation situations. These situations can cause the student to experience negative outcomes as a result of holding to his currently held values, or positive outcomes as a result of temporarily adopting the new value or attitude.

GROUP DISCUSSION: While not as effective as presentations, group participation or simulation discussions which help a student examine the consistencies and inconsistencies of currently held values, may help him change his attitude. This experience is much more effective when used in conjunction with some of the previously described procedures.

EXAMINE THE SAMPLE PRACTICE STRATEGY ON THE FACING PAGE. THEN, TURN TO P. 102.

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *Sixth grade students*

   Behavior: *will come to value an unpolluted environment. Their concern for pollution will be measured by the way they discard papers, wrappers, etc.*

   Conditions: *on an outing where they are given individually wrapped candy and do not know that their paper discard behavior is being observed.*

   Degree: *The number of papers thrown on the ground will be significantly less that during a "baseline" outing.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *attitude or value*

4. Write Your Strategy Prescription:

Comments

Cognitive strategies are used here.

If group activity is fun, even rebellious students should enjoy working toward a common goal of cleanliness.

This outing should not be the one used for assessment.

Presentation

Practice

Plan and use a cognitive strategy during which students learn the dangers of pollution, etc.

Organize a cleaning campaign where students work together to clean up a city park or some other public facility.

Conduct discussions or simulated debates on industrial pollution, pollution by home owners, etc.

Evaluation

Plan two outings as part of your other objectives. These can be to public monuments or facilities, etc.

During each outing, make individually wrapped candy or gum available to your students.

Without being obvious, count the number of wrappers thrown on the ground or floor.

DO NOT *tell students this is measuring their attitude toward pollution.*

DO NOT *remind students to use proper receptacles for waste disposal.*

GO TO P. 102 FOR PRESENTATION STRATEGIES

PRESENTATION STRATEGIES FOR AN AFFECTIVE, ATTITUDE OR VALUE OBJECTIVE

Present the student a statement of the attitude(s) or value(s) of concern. Recreate situations illustrating the value or attitude, but avoid the specific situations to be used in assessing whether or not he has adopted the attitude or value.

AVOID PROMPTING SPECIFIC BEHAVIORAL EXPRESSION: Attitudes and values require both cognitive expression and behavioral expression. It is desirable and necessary to verbalize the value for the student. It is also desirable for him to see behavioral expression of the value. However, he must not be told the specific behavioral expression which will be used to assess his attitude or value change, because to do so may prompt him to respond after remembering how he ought to act rather than on the basis of how he feels.

ILLUSTRATE ATTITUDE OR VALUE: Carefully designed presentations can have a significant effect in changing attitudes and values. The procedures which make such presentations effective are those which cause the student to carefully examine his existing values and realize they are inconsistent with other values which have even more importance to him. The procedure required is as follows: Identify those values or attitudes about which the student has strong positive or negative feelings. During the presentation, demonstrate that the new attitude or value will preserve conditions associated with the old positively held attitude or prevent conditions associated with the old negatively held attitude.

DIFFERENT PRESENTATIONS: Because the same values are not held by all individuals to the same degree, a very effective presentation for one person may have little or no effect on another person. It may be necessary, therefore, to prepare several presentations, each based on different previously held values. Students could then be grouped according to their previous values and shown the appropriate presentation. If the student experiences a presentation based on an attitude he strongly opposes, he may be adversely affected. However, in most cases, it is acceptable to show all presentations to all students.

EXAMINE THE SAMPLE PRESENTATION STRATEGY ON THE FACING PAGE. THEN, TURN TO P. 104.

SAMPLE OBJECTIVE 1

1. **Write Your Objective**

   Audience: *Sixth grade students*

   Behavior: *will come to value an unpolluted environment. Their concern for pollution will be measured by the way they discard papers, wrappers, etc.*

   Conditions: *on an outing where they are given individually wrapped candy and do not know that their paper discard behavior is being observed.*

   Degree: *The number of papers thrown on the ground will be significantly less that during a "baseline" outing.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *attitude or value*

4. Write Your Strategy Prescription:

Comments

The more vivid the examples, the greater the impact here.

If students know when they will be observed, they will be on guard.

Presentation

Show some of the problems caused by pollution; contrasting unpolluted with polluted areas is especially effective.

Discuss ways each citizen can help promote a cleaner environment.

DO NOT tell students that their attitude change will be observed during the outings.

Practice

Plan and use a cognitive strategy during which students learn the dangers of pollution, etc.

Organize a cleaning campaign where students work together to clean up a city park or some other public facility.

Conduct discussions or simulated debates on industrial pollution, pollution by home owners, etc.

Evaluation

Plan two outings as part of your other objectives. These can be to public monuments or facilities, etc.

During each outing, make individually wrapped candy or gum available to your students.

Without being obvious, count the number of wrappers thrown on the ground or floor.

DO NOT *tell students this is measuring their attitude toward pollution.*

DO NOT *remind students to use proper receptables for waste disposal.*

GO TO P. 104 FOR ANOTHER SET OF SAMPLE STRATEGIES.

SAMPLE OBJECTIVE 2

1. **Write Your Objective**

   Audience: *Elementary school students*

   Behavior: *will develop an attitude of respect for the American flag. They will demonstrate this respect by properly storing the flag and by holding their hands over their hearts whenever the flag is presented.*

   Conditions: *The students must have no knowledge of the check on their behavior.*

   Degree: *Objective accomplished if an average of 90% of the class remember to show proper respect.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *attitude or value*

4. Write Your Strategy Prescription:

Comments

Vivid illustrations will do much toward achieving your objective.

Don't give students your objective.

Presentation

Present well told or illustrated experiences from history where outstanding loyalty has been shown to the flag.

Discuss symbols and their importance.

Express your hope that all students will show proper respect for the flag.

Do Not *indicate that student's behavior will be monitored during assemblies or during the posting of the colors.*

Cognitive strategies used for information.

Make the group activity fun, but with a serious mission.

Practice

Teach how to display the flag, some history of the flag, kinds of flags, etc. using cognitive procedures.

Have the class plan a program to be presented to the rest of the school demonstrating proper respect for the flag. Their group goal should be helping other students demonstrate proper respect.

Discuss situations where proper respect has not been shown. Illustrate the consequences, both in spirit and loyalty, etc.

This is an observed behavior.

Get a count both prior to and after the group practice experience.

If students know you are making observations, your assessment may be biased and inaccurate.

Evaluation

During assemblies, quickly count the number of students who show respect. **Do Not** *discuss problems in this area with your students.*

Without being obvious, check the folding of the flag. Have different students assigned to hoist and retire the flag on a rotating basis. **Do Not** *correct students directly for improper procedure here.*

An increase in respect from before practice to after will indicate progress toward the objective.

NOW, WRITE OUT STRATEGIES FOR YOU OWN OBJECTIVE.

WRITE YOUR OWN OBJECTIVE AND STRATEGIES, HERE

1. **Write Your Objective**

   Audience:

   Behavior:

   Conditions:

   Degree:

2. The Domain is:
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription:

Explain why you use a particular strategy.
(See pps. 98, 100 and 102.)

Presentation

Practice

Evaluation

GO TO P. 109

A QUICK REFERENCE GUIDE TO INSTRUCTIONAL MEDIA

VISUAL MEDIA	GENERAL	EVALUATION	PRACTICE	PRESENTATION
Objects		110-111	112-113	114-115
The Real Things	116, 174	116	116	116
People	116, 174	116	116	116
Models	117, 175	117	117	117
Still Pictures		110-111	112-113	114-115
Flat Pictures	118, 176	118	118	118
35mm Color Slides	118, 177	118	118	118
Filmstrips	119, 177	119	119	119
Overhead Transparencies	119, 178	119	119	119
Chalkboard	120, 179	120	120	120
Charts and Posters	120, 180	120	120	120
Maps	121, 180	121	121	121
Motion Pictures		110-111	112-113	114-115
Commercially Produced 16mm Films	122, 181	122	122	122
Single Concept 8mm Films	122, 181	122	122	122
Locally Produced Films	123, 182	123	123	123
Audio Media		110-111	112-113	114-115
People	124, 184	124	124	124
Professionally Produced Audio Materials	124, 185	124	124	124
Locally Produced Audio Materials	125, 186	125	125	125
Educational & Commercial Radio Programs	186			
Written Materials		110-111	112-113	114-115
Text and Reference Books	126, 188	126	126	126
Workbooks	126, 188	126	126	126
Periodicals	127, 189	127	127	127
Teacher Produced Handouts	127, 190	127	127	127
Combination of Media				
Audio and Other Media in Combination	187			
Written Material & Other Media in Combination	190			

EXAMPLE LOCATOR FOR THE SAMPLE MEDIA PRESCRIPTIONS

COGNITIVE	PSYCHOMOTOR	AFFECTIVE
Object Naming . pps. 130 & 132	Self-Paced . . pps. 146 & 148	Motivation or Interest pps. 158 & 160
Event Naming . pps. 134 & 136	Mixed Pace . pps. 150 & 152	Attitude or Value pps. 162 & 164
Classification . . pps. 138 & 140	Externally Paced . . . pps. 154 & 156	
Rule Using . . . . pps. 142 & 144		

STEP FIVE	SELECTING INSTRUCTIONAL MEDIA

The decision you will make in Step Five will be based on three important considerations:

your objectives,
the instructional strategies you have selected, and
the special needs of your students.

Your media decisions will result in the selection of combinations of media useful for each of your instructional strategies:

evaluating student performance
providing for student practice, and
presentation of information to large or small groups, or to individual students.

EVALUATION OF STUDENT PERFORMANCE

In planning student evaluation, you must select the combination of instructional media that will most effectively and efficiently evidence that your students can perform the **behavior** under the **conditions** given and to the **degree** specified in the objective.

PROVIDING FOR PRACTICE

In providing practice opportunities for students, your task is to select the combination of instructional media most useful to them as they practice under the conditions stated in your objective until they meet the criteria (degree) you specified. An added concern is to motivate their desire to continue practicing until they reach the stated criterion.

PRESENTATION OF INFORMATION

In presenting the required information, you are concerned with selecting the media that will be the most useful in assisting your students achieve the instructional objective using the instructional strategy selected. This includes presenting them with subject matter related information and information concerning what is expected of them, how they will be evaluated, and the learning activities available which will enable them to get from where they are to where they should be at the conclusion of the unit. You are also anxious to ignite their enthusiasm for the subject matter and the instructional activities.

TO SELECT MEDIA FOR EVALUATION	GO TO P. 110.
TO SELECT MEDIA FOR PRACTICE	GO TO P. 112.
TO SELECT MEDIA FOR PRESENTATION	GO TO P. 114.

EVALUATION OF STUDENT PERFORMANCE

First, in the left column locate the **learning strategy** that you previously selected.

Second, considering your objective and learning strategy, note how **objects, still and motion pictures, audio media** and **written materials** can best be used either alone or in combination. (See the sample media prescriptions starting on page 129 for ideas.)

Third, turn to the page indicated at the bottom of the page for detailed information on the types of media you selected.

Fourth, repeat the process for PROVIDING FOR STUDENT PRACTICE and PRESENTING INFORMATION.

LEARNING STRATEGY	OBJECTS	STILL PICTURES
NAMING STRATEGY (For ideas see pps. 130 & 132)	If an object or its parts are to be named, present actual things or models and ask students to write or tell its name, its parts, or functions.	If the object is inaccessible and can be adequately represented with still pictures, have the students examine the pictures and write or tell names of the object, its parts, or functions.
EVENT NAMING STRATEGY (For ideas see pps. 134 & 136)	If objects are a critical part of the event, display them and have students describe their relationship to the event or arrange them in sequence.	If an event can be presented by still pictures, provide a series for students to name, arrange in order, or use to illustrate relationships.
CLASSIFICATION STRATEGY (For ideas see pps. 138 & 140)	If the concept involves things, present students with a number of actual objects or models they haven't seen before and ask them to identify the class to which they belong.	If the concept can be represented with pictures, have the students identify a series of pictures of the actual object or event and pictures of other objects or events. Be sure the pictures illustrate the relevant attributes of the concept.
RULE USING STRATEGY (For ideas see pps. 142 & 144)	If using the rule requires tools or the production of some object from raw materials, provide students with the objects necessary to demonstrate the rule or procedure.	If the application of the rule could be illustrated with pictures, require students to select and arrange in sequence those pictures that illustrate the application of the rule. This is usually less adequate than having the student acutally use the rule.
SELF-PACED STRATEGY (For ideas see pps. 146 & 148)	When a student is to move his own body or to manipulate a stationary object, he must have the appropriate objects to perform under the conditions specified in the objective.	Still pictures are not usually appropriate for evaluation of this behavior. Photographs (especially polaroid) of his own performance may provide some feedback.
MIXED-PACE STRATEGY (For ideas see pps. 150 & 152)	Have the student perform with the required objects under the conditions specified in the objective.	Still pictures, particularly with a polaroid camera, might be used for feedback but are usually less effective than videotape or motion pictures.
EXTERNALLY-PACED STRATEGY (For ideas see pps. 154 & 156)	Have the student perform with the required objects under the conditions specified in the objective.	Still pictures, particularly with a polaroid camera, might be used for feedback but are usually less efective than videotape or motion pictures.
INTEREST OR MOTIVATION STRATEGY (For ideas see pps. 158 & 160)	If you are concerned with evaluating the student's interest towards particular objects, observe his free choice use or study of certain types of objects when they are available along with the other objects.	If still pictures could effectively display the object of situation of concern, have students rank a series of still pictures of objects, events, situations in order of preference.
ATTITUDE OR VALUE STRATEGY (For ideas see pps. 162 & 164)	If the attitude or value involves objects, observe students in the selection and use of the objects in situations when they are not aware that they are being observed.	If the subject of the instruction could be illustrated by pictures of objects or situations, have students rank a series of still pictures in order of preference. Make a tentative inference of his attitude based on the pictures selected.
	GO TO PAGE 116	GO TO PAGE 118

MOTION PICTURES	AUDIO MEDIA	WRITTEN WORDS & SYMBOLS
If motion is a critical feature or is the function to be named, show short film clips of the object engaged in its function and ask the student to write or tell the name of the object, its parts or function.	If sounds are to be identified, provide recorded or live sounds in an order different than that practiced and have the student name each sound. Recorded audio can be used to provide directions or control for evaluation using other kinds of media.	If written words or symbols are to be named or associated with other words or symbols, or if a passage or symbolic statement is to be memorized, have students either write or orally recite the memorized material.
Since many events involve relationships or human interaction, the best representation is often a dramatization presented by motion picture or videotape. Present critical portions of such motion pictures for the student to identify or sequence.	If an important characteristic of an event is some type of sound or if a dramatic audio portrayal of the event would provide students with critical information, have them name or sequence the event in recorded or live audio presentations.	If the event can be dramatized through the use of written words, provide students with written descriptions or narrations and have them name the event, describe relationships, or order episodes in sequence.
If motion or time-space relationships are relevant attributes of the concept, have students view filmed examples and non-examples of the object or event and identify the examples.	If the concept is a sound or voice or if critical attributes require dramatic portrayal, have students identify audio examples and similar sounding non-examples.	If the concept is abstract or symbolic in nature, present written materials and descriptions and have students pick out the examples from a series that also includes non-examples.
If application of the rule involves motion, have students view a short sequence of a motion picture, and describe the application of the rule in the situation depicted. Actually using the rule usually provides more adequate evaluation.	If application of the rule involves audio, play relevant audio tape, and have the student identify correct applications of the rule. Actual use of the rule usually provides better evaluation.	If the rule involves manipulation of written or symbolic material, present the problem and have the student apply the appropriate operations to produce an answer or solution.
Motion pictures would be of value primarily for feedback. Videotape has the advantage over motion pictures because of more immediate feedback.	Recorded or live audio directions are often necessary in initiating the evaluation. Recorded feedback is sometimes useful to the student.	Provide each judge with a checklist to use while evaluating the psychomotor performance. Written tests are not adequate to evaluate psychomotor skills.
Motion pictures and especially videotape can provide valuable feedback for the student.	Verbal cues are sometimes required to initiate the student performance. Recorded feedback is sometimes valuable to the student.	Provide judges with a checklist for evaluating performance. Written tests are usually inadequate.
Motion pictures and especially videotape can provide valuable feedback for the student.	Verbal cues are sometimes required to initiate the student performance. Recorded feedback is sometimes useful to the student.	Provide judges with a checklist for evaluating performance. Written tests are usually inadequate.
If motion pictures could effectively present the event or situation, have students view a film and then using interest scales rate interest in the event, situations, or behavior that were illustrated.	If the subject of the objective is either natural or man-made sounds, provide students with the opportunity to listen to a variety of tapes and records including the subject of interest. Note the kinds of materials that he listens to.	If the ideas with which you are concerned are abstract, and words and symbols would be useful in evaluating the students interest in them, provide them with a series of statements or descriptions and ask them to rate on an interest scale, express interest orally or in writing, or arrange in order according to interest.
If motion pictures could provide a useful simulation of a situation in which a given attitude would be involved, project films or film clips and have the students indicate their feelings toward the situation or the action of a particular individual through the use of an attitude scale.	If the subject of the attitude or value could be illustrated through sounds or a recorded dramatization of a situation, provide students with the opportunity to listen to a variety of tapes and records including some on the subject you are interested in evaluating. Note the kinds of tapes and records they select.	If the situation can be presented with written materials, provide students with a series of written statements or descriptions and ask them to rate them on an interest scale, express interest orally or in writing, or arrange in order according to their interest.
GO TO PAGE 122	GO TO PAGE 124	GO TO PAGE 126

PROVIDING FOR STUDENT PRACTICE

First, in the left column locate the **learning strategy** that you previously selected.

Second, considering your objective and learning strategy, note how **objects, still and motion pictures, audio media** and **written materials** can best be used eith alone or in combination. (See the sample media prescriptions starting on page 129 for ideas.

Third, turn to the page indicated at the bottom of the page for detailed information on the types of media you selected.

Fourth, repeat the process for PRESENTING INFORMATION and EVALUATION OF STUDENT PERFORMANCE.

LEARNING STRATEGY	OBJECTS	STILL PICTURES
NAMING STRATEGY (For ideas see pps. 130 & 132)	If naming involves an object, parts of an object or its function, make objects available for repeated practice. Provide feedback to students.	If the object is inaccessible and can be represented by still pictures, provide unlabeled pictures for individual study. After the student responds, give him the name so he can check his response. Provide repeated opportunities to name the pictures until criteria is reached.
EVENT NAMING STRATEGY (For ideas see pps. 134 & 136)	If objects are important elements of an event, make them available during practice to stimulate recall of episodes in the event or for practice in sequential arrangement. Provide feedback.	If episodes of an event or specific relationships can be effectively illustrated through still pictures, provide a series of pictures and have students practice arranging events and describing relations between separate pictures. Or, have students order pictures in the correct sequence of the event or process. Provide feedback.
CLASSIFICATION STRATEGY (For ideas see pps. 138 & 140)	If a concept consists of actual objects, supply a wide variety of both easy and hard examples for students to practice identifying.	If actual objects are inaccessible and if motion isn't required, still pictures could be used. Provide students with a series of pictures of the object or event along with a number of non-examples.
RULE USING STRATEGY (For ideas see pps. 142 & 144)	If the rule involves the use of objects, make available those objects necessary to practice the application of a rule or the materials necessary to construct something using the rule.	If the rule can be illustrated with pictures, provide a series of still pictures calling for the use of a specified rule. Require students to apply the rule and to describe the steps that they went through in using it.
SELF-PACED STRATEGY (For ideas see pps. 146 & 148)	Provide the required objects to be manipulated.	Display still pictures of the key points of the skill for a student to use in analyzing and correcting his own performance.
MIXED-PACE STRATEGY (For ideas see pps. 150 & 152)	Consider the use of special objects to assist in simplifying the task and slowing its pace during initial practice. Final practice with the required objects should be under a variety of "real world" conditions.	Polaroid pictures may be used for feedback or still pictures may be used to illustrate key aspects of the performance. Slow motion or stop action is usually better if available.
EXTERNALLY-PACED STRATEGY (For ideas see pps. 154 & 156)	Consider the use of special objects to assist in simplifying the task and slowing its pace during initial practice. Final practice with the required objects should be under a variety of "real world" conditions.	Polaroid pictures may be used for feedback or still pictures may be used to illustrate key aspects of the performance. Slow motion or stop action is usually better if available.
INTEREST OR MOTIVATION STRATEGY (For ideas see pps. 158 & 160)	If you are trying to develop the student's interest in objects, make a display of the relevant objects and models available for individual student examination. Provide written or tape recorded descriptions for students to listen to.	If still pictures usefully depict the objects or events, provide a display of pictures dealing with the subject for individual study. Change display often.
ATTITUDE OR VALUE STRATEGY (For ideas see pps. 162 & 164)	If the attitude or value involves an object, display objects involved with a particular subject illustrating advantages of a particular behavior and encourage your students to view them at their leisure.	If the subject of the instruction could be illustrated by pictures of the object or situation, display a variety of pictures for individual viewing or to help stimulate a discussion of the advantages of behaving in a certain manner.
	GO TO PAGE 116	GO TO PAGE 118

MOTION PICTURES	AUDIO MEDIA	WRITTEN WORDS & SYMBOLS
If motion is an important characteristic of the object or parts of the object, provide film clips for naming practice. Repeated practice along with feedback is essential.	If the objective calls for naming sounds, make tape recordings or provide live presentation of the sound, speech, or music. On an audio tape, present the sound, allow time for student response, and then provide the correct name. Mix order of sounds to eliminate hidden hints.	If objects to be named are written words or symbols, provide repeated practice with these words and symbols in mixed order. Provide feedback.
If relationships between elements of an event are important or if a dramatic presentation is required, make available a series of film clips and have students name the events depicted and describe their relationship to other elements of the event. Students might also indicate the proper sequence of the events illustrated. Provide feedback.	If sound is an important characteristic of an event, or if the event can be adequately represented by narration or dramatization, play a tape recording or make a live presentation. Have the student name or sequence critical episodes. Provide feedback.	If an event can be adequately described by narration or dramatization, present such written materials and have students practice naming them or arranging the steps of the process in sequence. Provide feedback.
If motion is a relevant attribute or critical time-space relationships are involved, provide film loops showing a variety of examples and non-examples of the object or event.	If some type of sound is a critical attribute of the concept, make available an audio tape with examples and non-examples of the sounds to be classified.	If a concept is abstract or symbolic, make available a wide variety of descriptions or symbol examples and non-examples to provide classification practice.
If the application of the rule involves motion or takes place in real life situations, use motion pictures to present situations to students to analyze and describe the specific application of a given rule.	If the situation involves sounds or a situation that could be dramatically portrayed through audio media, provide tape recorded situations requiring the application of specific rules. Have student record a dialogue illustrating the correct application of a rule to a subject that you specify.	If the rule requires symbol manipulation, provide short written situations or problems and have students apply the rule specifying the steps involved. Have students provide a written illustration on the application of a rule in a situation that you specify.
Use videotape or motion picture to provide feedback.	Audio feedback is less desirable than a visual feedback, but better than no feedback at all.	Provide checklist for students to use during practice as a reminder of key points that will be observed in judging the skill.
Normal speed and slow motion pictures and videotapes could be taken of the performance to provide feedback to the student.	Audio feedback could be provided in addition to or in-lieu of motion picture or videotape feedback. By itself audio feedback is usually not sufficient.	Make performance checklists available to the student so that he can keep the relevant cues in mind as he practices.
Normal speed and slow motion pictures and videotapes could be taken of the performance to provide feedback to the student.	Audio feedback could be provided in addition to or in lieu of motion picture or videotape feedback. By itself, audio feedback is usually not sufficient.	Make performance checklists available to the student so that he can keep the relevant cues in mind as he practices.
If motion pictures could dramatically portray the advantages or arouse excitement in the subject, provide films on a free choice basis for student viewing.	In class or on an audio tape have knowledgeable resource people share their enthusiasm for a subject. Also, contract with the students to listen to recorded dramatizations, discussions, and music, along with audio materials that they want to listen to.	If the subject is abstract and could adequately be portrayed in written form, or if the interest is to be promoted to symbolic materials, provide a wide variety of materials for student free-choice reading.
If motion pictures can provide a simulation of a situation, use films in a group meeting to display the advantages of a given behavior. Use films to stimulate discussion and, if possible, make available for free choice viewing.	If the instruction is intended to develop a positive attitude toward a particular music or other audio stimuli, or if your students would benefit from a recorded dramatization of situations, present the audio material in class or make available for selection and use in free choice individual study situations.	If the attitude or value concerns a principle or situation that could be described in writing, make available a variety of written materials that would help promote the desired behavior.
GO TO PAGE 122	GO TO PAGE 124	GO TO PAGE 126

PRESENTING INFORMATION

First, in the left column locate the **learning strategy** that you previously selected.

Second, considering your objective and learning strategy, note how **objects, still and motion pictures, audio media** and **written materials** can best be used either alone or in combination. (See the sample media prescriptions starting on page 129 for ideas.)

Third, turn to the page indicated at the bottom of the page for detailed information on the types of media you selected.

Fourth, repeat the process for PROVIDING FOR STUDENT PRACTICE and EVALUATION OF STUDENT PERFORMANCE.

LEARNING STRATEGY	OBJECTS	STILL PICTURES
NAMING STRATEGY (For ideas see pps. 130 & 132)	If the objective specifies the naming of objects or parts of objects, display required objects and name them, their characteristics and functions.	If still pictures would be the most efficient way of presenting objects, display the pictures and point to the object or parts on the pictures naming them and describing their characteristics and functions.
EVENT NAMING STRATEGY (For ideas see pps. 134 & 136)	Display objects connected with a specific event, explaining how the objects relate to it. Develop student interest in the objects by describing and illustrating their use.	Display a series of still pictures that illustrates a specific event, episode, relationship, or sequence. Provide names and discuss the relationships and sequence in which the events occur as illustrated by the pictures.
CLASSIFICATION STRATEGY (For ideas see pps. 138 & 140)	If the concept is an object, display a variety of examples and non-examples and point out the relevant attributes.	If the concept is an unaccessible object or an event, display a series of pictures of the object or event while pointing out relevant characteristics.
RULE USING STRATEGY (For ideas see pps. 142 & 144)	If the rule involves the use of an object, show the use of objects in the application of a rule of demonstrate the construction of something using the rule.	If the application of the rule can be effectively presented using still pictures, display a series of pictures illustrating the steps involved in applying a specified rule. Also illustrate the results of misapplying the rule.
SELF-PACED STRATEGY (For ideas see pps. 146 & 148)	While demonstrating the skill, point out the relevant cues and indicate performance criterion.	Project or display a series of still pictures illustrating the key points of the skill. Make picture sets available with written or tape recorded commentary for individual use.
MIXED-PACE STRATEGY (For ideas see pps. 150 & 152)	While demonstrating the skill in normal and slow motion point out the relevant cues and indicate criterion for performance.	Project or display a series of still pictures illustrating the key points of the skill. Make the pictures available with written or tape recorded commentary for individual use.
EXTERNALLY-PACED STRATEGY (For ideas see pps. 154 & 156)	While demonstrating the skill in normal and slow motion point out the relevant cues and indicate criterion for performance.	Project or display a series of still pictures illustrating the key points of the skill. Make the pictures available with written or tape recorded commentary for individual use.
INTEREST OR MOTIVATION STRATEGY (For ideas see pps. 158 & 160)	If you are trying to develop interest in certain types of objects, provide a display of the objects in the classroom or take students to where the objects are located in their natural environment.	If still pictures can clearly illustrate the object or event, use them in class to illustrate a discussion in which you encourage interest in a particular thing or behavior. Make the pictures and an audio tape discussion available for individual student use.
ATTITUDE OR VALUE STRATEGY (For ideas see pps. 162 & 164)	If the attitude or value involves an object, discuss the objects in class and make available for individual study. Provide written or audio tape commentary for individual student use with the object.	If the attitude or value could be effectively illustrated using still pictures, use overhead transparencies, slides, filmstrips, along with other audio and written media for group and individual use.
	GO TO PAGE 116	GO TO PAGE 118

MOTION PICTURES	AUDIO MEDIA	WRITTEN WORDS & SYMBOLS
If the object or part of the object should be viewed in motion, show motion pictures or film clips while verbally naming the object or parts and describing their function and characteristics.	If an audio stimulus is to be named, present the sound or voice and tell the students its name and describe its characteristics.	If written words and symbols are to be named or associated with other words and symbols, provide the name or association while displaying the word or symbol.
If motion or a dramatic portrayal is required, show a series of film clips illustrating specific events, episodes, relationships, or sequence. Also give the names, descriptions or sequence of steps.	If particular sounds are an important part of the event, present a recorded or a live presentation of the required sounds. They should be presented as vividly as possible and with the names and necessary descriptions.	If the event would most efficiently be illustrated through written words, recount the event and provide statements that will motivate students to practice.
If motion is a relevant attribute of the object or if a dramatic portrayal of the event is important, provide motion pictures or film clips for student viewing. Point out the relevant attributes.	If sounds are relevant attributes of the concept, have students listen to either a live or recorded presentation of the example sounds along with non-examples. Point out the differences between examples and non-examples.	If the concept is abstract and could adequately be presented with written materials, provide examples and non-examples in the form of short written descriptions or situations.
If the application of the rule involves motion or could best be illustrated in a dramatic situation, use short film loops or sections of films to illustrate the steps involved in applying a rule.	If the application of the rule could be presented using audio media, record conversations, dramatic situations, or descriptions that illustrate the application of the rule.	If the application of the rule involves mathematical or other symbols, provide short written situations or problems showing the step-by-step application of the rule.
Using stop action, slow motion, and normal speed, provide short film sequences demonstrating the skill.	Point out key points and offer performance tips during a demonstration or the viewing of still and motion pictures of the skill.	Provide descriptive materials for motivation and make available performance checklists during the demonstrations.
Use films or film clips utilizing stop motion, slow motion, and the normal speed while pointing out the relevant cues and criteria.	During a demonstration or while using still or motion pictures to illustrate the performance of a skill, call attention to the key points and offer performance tips.	Provide checklists for students to use while they are observing the demonstration of the skill.
Use films or film clips utilizing stop motion, slow motion, and the normal speed while pointing out the relevant cues and criteria.	During a demonstration or while using still or motion pictures to illustrate the performance of a skill, call attention to the key points and offer performance tips.	Provide checklists for students to use while they are observing the demonstration of the skill.
If you can locate one or more motion pictures that provides a stimulating illustration of the subject, use them in class or make available on individual student basis.	Share your own enthusiasm for the subject in class and on an audio tape. Involve resource people in similar presentations. If the subject is primarily audio in nature, play recordings of representative materials as you discuss them.	If the subject is abstract and could be presented with written material, provide interesting descriptions and illustrations for individual study. Include written materials that share your own enthusiasm for the subject.
If the presentation of the subject of the attitude or value requires the dramatic impact of a motion picture, show and discuss a number of different relevant motion pictures over a period of time.	If the subject of the attitude or value is itself audio stimuli, or could be effectively portrayed through audio media, play and discuss records and tapes in class, and provide recorded audio material for individual use along with other instructional media.	If information supporting the attitude or value can be properly presented using written materials, duplicate specially prepared materials for student use. Make available books, periodicals, along with a list of challenging questions with references noted.
GO TO PAGE 122	GO TO PAGE 124	GO TO PAGE 126

THE USES OF OBJECTS IN INSTRUCTION

If you feel that the use of OBJECTS would help your students achieve the instructional objectives, your task now is to select the most useful means of making the required objects available.

There are three types of objects from which to choose:

1. THE REAL THINGS

By using real things in instruction, you can provide your students with an opportunity to see, feel, manipulate and use the actual objects connected with the specified objective. Some things will be most useful to your students in their actual environment, while others are just as useful when brought into the classroom or laboratory for study.

ILLUSTRATIONS

Evaluation:
Demonstrate how the American flag should be displayed.
Arrange materials needed to make white sauce in sequence.
Catch eight over-the-shoulder football passes out of ten attempts.

Practice:
Using a ¼" lettering brush, produce the gothic letter "G" 20 times.
Ride a bicycle in a level unobstructed area.
Use test blocks of known hardness of the Rockwell Hardness Tester.

Presentation:
Watch a demonstration of the use of chopsticks.
Handle rock samples while listening to audio tape description.
Watch demonstration of hand position in typing.

FOR ADDITIONAL INFORMATION, SEE PAGE 174

2. PEOPLE

You, outside resource people, and students are useful objects for instruction, especially in the psychomotor area.

ILLUSTRATIONS

Evaluation:
Swim twenty yards using the Australian crawl.
Demonstrate ability to perform broken field running.
Voluntarily stand and place hand over heart when American flag passes in a parade.

Practice:
Rehearse the Mexican hat dance.
Observe the non-verbal communication used by children at play.
Try out new hair styles on uncomplaining friends.

Presentation:
View an actual soccer match.
See how a would-be mugger can be stopped.
Watch a demonstration of a jack-knife dive.

FOR ADDITIONAL INFORMATION, SEE PAGE 174

3. MODELS

When the real things are not readily accessible or are too big, small, complex or expensive, scale models might be more appropriate for examination, operation and use.

ILLUSTRATIONS

Evaluation:
Trace digestive system using cutaway model of human body.
Demonstrate "driving ability" in a driver education car simulator.
Explain and demonstrate operation of flaps on an airplane.

Practice:
Name numbered parts on model of human eye.
Verify airfoil design principles using flying airplane model.
Practice taking blood samples using model of human arm.

Presentation:
Using a model of Saturn V missile, investigate lift-off procedures.
See how an internal combustion engine operates.
View model of covered wagons in a diorama.

FOR ADDITIONAL INFORMATION, SEE PAGE 175.

Carefully consider the use of objects in combination with other instructional media

Still Pictures . . . . . .page 118
Motion Pictures . . . . . .page 122
Audio Media . . . . . .page 124
Written Materials . . . . . .page 126

If you have not completed the selection of media for all three phases of the instructional process, turn to the pages indicated and complete those phases that remain.

Evaluating Student Performance . . . . . .page 110
Providing Practice . . . . . .page 112
Presenting Information . . . . . .page 114

When you have completed all three phases, turn to page 166 and fill out the "Instructional Strategy and Media Selection Worksheet."

THE USE OF STILL PICTURES IN INSTRUCTION

If you feel that the use of still pictures would help your students achieve the instructional objectives, your task now is to choose the most useful means of making the still pictures available.

There are seven alternatives from which to choose:

1. FLAT PICTURES

Flat pictures can be either mounted or unmounted, black and white or color photographs, paintings or drawings from magazines, picture kits from commercial sources. They are especially useful for prolonged individual study.

ILLUSTRATIONS

Evaluation:
Identify the pictures of farm animals.
Arrange pictures of breadmaking procedure in correct sequence.
Describe the circumstances surrounding the event pictured.

Practice:
Study pictures of cattle and describe possible diet deficiency.
Compare own tennis forehand grip with photographs.
From series of pictures, select those that illustrate a given concept.

Presentation:
Study bulletin board display of clouds.
View pictures of White House projected with an opaque projector.
Study Civil War photographs in a book.

FOR ADDITIONAL INFORMATION, SEE PAGE 176.

2. 35mm SLIDES

Mounted in 2" by 2" frames, 35mm color slides offer a means of projecting a high quality picture for group use. They can also be viewed by individual students in a hand viewer.

ILLUSTRATIONS

Evaluation:
Identify slides of Arabian horses projected onto screen.
When two pictures are projected at the same time, select the picture that illustrates a given concept.

Practice:
Name parts of object pointed to by the teacher.
Using a series of cloud slides, practice identifying the cirrus clouds.
Students make their own slides to illustrate the concept "spring."

Presentation:
Using a hand viewer, study slides of microscopic organisms.
View projected slides of a student's trip to Mexico.
View class produced slide-set showing litter in the community.

FOR ADDITIONAL INFORMATION, SEE PAGE 177.

3. FILMSTRIPS

Filmstrips consist of a series of separate still photographs arranged in a fixed sequence on a single piece of 35mm film. Because they are usually carefully researched and professionally produced, filmstrips offer a logical, organized presentation on a given subject, either with sound or silent.

ILLUSTRATIONS

Evaluation: Name process illustrated in filmstrip.
Write a new descriptive sound track for the filmstrip.
Describe exceptions to information presented in the filmstrip.

Practice: With the help of a filmstrip, rehearse naming steps in a sequence.
Use filmstrip as a guide to checking performance of a skill.

Presentation: View filmstrip on musical notation.
Study programmed filmstrip that presents information, asks a question, allows time for responses, and then presents correct answers.

FOR ADDITIONAL INFORMATION, SEE PAGE 177.

4. OVERHEAD TRANSPARENCIES

An overhead transparency is a clear sheet of plastic mounted in a 10" by 10" frame for use on the overhead projector. The image can consist of written material, artwork or a photograph reproduced in black or colored lines.

ILLUSTRATIONS

Evaluation: Provide Spanish names of parts of body illustrated on transparency.
Indicate sequence of activities listed on transparency.

Practice: Name elements of insect life cycle illustrated.
Supply missing words in a quotation being memorized.
Analyze sonnets written by students.

Presentation: Project the definition of a concept.
Using overlays, show how westward expansion took place.
Present music and words for a song.

FOR ADDITIONAL INFORMATION, SEE PAGE 178.

5. CHALKBOARD

A flexible inexpensive means of presenting both written material and single illustrations for small and large group presentation.

ILLUSTRATIONS

Evaluation:
Write out test questions and problems.
Label diagrams and maps.
Criticize and correct foreign language texts.

Practice:
Have students solve problems and discuss solutions.
Play musical scores and check each other.
Make chemical solutions as per equations.

Presentation:
Develop your topical outline as you present.
Draw maps diagrams, tables. Use colored chalk.
Solve mathematical problems. Demonstrate.

FOR ADDITIONAL INFORMATION, SEE PAGE 179.

6. CHARTS AND POSTERS

Charts and posters are generally used for simple instruction or reminders. They consist of graphic illustrations and written material on large sheets of cardboard and are usually displayed on an easel near the point of use or on the wall.

ILLUSTRATIONS

Evaluation:
Interpret data presented on a chart.
Write name of insects whose life cycle is illustrated.
Name unlabeled parts of a radial arm saw.

Practice:
Check steps of equipment operation during practice.
Interpret data presented on chart.

Presentation:
Demonstrate procedure for operating record player.
Promote attendance at concert.
Illustrate differences between spruce and pine trees.

FOR ADDITIONAL INFORMATION, SEE PAGE 180.

7. MAPS

Maps are simply drawings of the topography of a particular area showing important natural and man-made features.

ILLUSTRATIONS

Evaluation:
Fill in names on unlabeled map of New York State.
Identify communist dominated countries on map of world.
Draw principle rivers and mountains on outline map of Mexico.

Practice:
Complete outline maps in workbook.
Drill with flash cards of state outlines.
Trace routes of westward expansion.

Presentation:
Project map of United States using an overhead projector.
Display map on bulletin board along with photographs of major cities.
Study map and description in textbook.

FOR ADDITIONAL INFORMATION, SEE PAGE 180.

Carefully consider the use of still pictures in combination with other instructional media.

Objects . . . . . page 116
Motion Pictures . . . page 122
Audio Media . . . . . page 124
Written Materials . . . page 126

If you have not completed the selection of media for all three phases of the instructional process, turn to the pages indicated and complete those phases that remain.

Evaluating Student Performance . . . . . page 110
Providing Practice . . . . . page 112
Presenting Information . . . . . page 114

When you have completed all three phases, turn to page 166 and fill out the "Instructional Strategy and Media Selection Worksheet."

THE USE OF MOTION PICTURES IN INSTRUCTION

If you feel that the use of motion pictures would help your students achieve the instructional objectives, your task now is to select the most useful means of making the motion pictures available.

There are three alternatives available from which to choose:

1. COMMERCIALLY PRODUCED 16mm FILMS

Motion pictures are the most attention compelling of all of the instructional media. For showing objects in motion, providing a means of illustrating actual events and dramatically re-creating stories and situations.

ILLUSTRATIONS

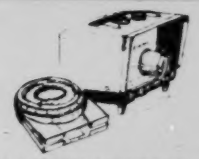
Evaluation:
List events involved in situation depicted in the film.
Role play the resolution of a situation after film is stopped.
Analyze motivation of characters in a dramatic film.

Practice:
View section of film, stop, discuss, replay, then go on.
Turn off sound on film and describe the demonstrated procedure.
Describe steps in a woodworking skill while viewing a film.

Presentation:
Visit colonial Williamsburg by viewing "Story of a Patriot."
Discover the nationwide problem of pollution through a film.
View a filmed soccer match.

FOR ADDITIONAL INFORMATION, SEE PAGE 181.

2. SINGLE CONCEPT 8mm LOOP FILMS



Available in continuous loop or easily rewound cartridges, single concept 8mm loop films are useful in providing demonstrations of single skills, processes, events or ideas. Although many 8mm films have soundtracks, the loop film is generally silent.

ILLUSTRATIONS

Evaluation:
Describe clay firing procedure illustrated in a loop film.
Identify the specific rule or principle depicted in the film.
When film is stopped, list in sequence the following steps in the process.

Practice:
Repeatedly view loop film on tennis backhand stroke during practice.
Practice naming ballet movements shown in a loop film.
Practice writing cursive letters following the model on the screen.

Presentation:
Study the unique gate of the Peruvian Pasco horse.
Repeatedly view time lapse loop film on birth of a butterfly.
View demonstration of backstroke by champion swimmer.

FOR ADDITIONAL INFORMATION, SEE PAGE 181.

3. LOCALLY PRODUCED MOTION PICTURES

Simple, but effective, motion pictures can be produced by the teacher, students, and media specialists, and tailored directly to the instructional requirements. Locally produced films offer many of the advantages of the commercially produced 16mm and single concept 8mm loop films.

ILLUSTRATIONS

Evaluation:
- View film illustrating misapplication of rules of courtesy and discuss corrections.
- Study motion pictures of local football games and discuss improvements.
- Videotape, playback, and rate student skill performance.

Practice:
- Review film on sewing buttonholes before continuing with project.
- Record and play back videotape of student speech for analysis.
- Videotape performance of athletic skills for study and improvement.

Presentation:
- Study procedure to be followed by school flag honor guard.
- View student-produced film on school safety.
- Record study play on film or videotape for use in other classes.

FOR ADDITIONAL INFORMATION, SEE PAGE 182.

Carefully consider the use of motion pictures in combination with other instructional media.

Objects . . . . . page 116
Still Pictures . . . . . page 118
Audio Media . . . . . page 124
Written Materials . . . page 126

If you have not completed the selection of media for all three phases of the instructional process, turn to the pages indicated and complete those phases that remain.

Evaluating Student Performance . . . . . page 110
Providing Practice . . . . . page 112
Presenting Information . . . . . page 114

When you have completed all three phases, turn to page 166 and fill out the "Instructional Strategy and Media Selection Worksheet."

THE USE OF AUDIO MEDIA IN INSTRUCTION

If you feel that the use of audio media would help your students achieve the instructional objectives, your task now is to select the most useful means of making the required audio media available.

There are three alternatives from which to choose:

1. PEOPLE

Teachers, resource people and students communicating information, engaged in discussion or providing feedback following student performance are using one of the most flexible and useful media available, the human voice.

ILLUSTRATIONS

Evaluation:
Role play a job interview.
Give a talk supporting the use of methadone in treating heroin addicts.
Read a specified passage written in Spanish.

Practice:
Rehearse a dramatic play with another person.
Role play the application of certain management procedures.
Rehearse a talk in front of a mirror before giving it in class.

Presentation:
Listen to a city councilman discuss local pollution.
Obtain instructions on the procedures for selecting media.
Listen to a baritone describe and sing selections from "Carmen."

FOR ADDITIONAL INFORMATION, SEE PAGE 184.

2. PROFESSIONALLY PRODUCED RECORDS AND TAPES

Through the use of pre-recorded records and tapes, thousands of professional musicians, actors, poets, historians, national and international figures and teachers can be brought into your classroom for group and individual study.

ILLUSTRATIONS

Evaluation:
Name composer after listening to a musical selection.
Identify person speaking in a recorded historical news broadcast.
Listen to a particular type of music in a free choice situation.

Practice:
Sing along with professional music groups.
Analyze style of actor reading dramatic selections.
Write news story after listening to recorded World War II news broadcast.

Presentation:
Play and discuss selections from George Gershwin.
Listen to professional actors in "Hamlet."
Return to Valley Forge through a recorded "You Are There" program.

FOR ADDITIONAL INFORMATION, SEE PAGE 185

3. LOCALLY PRODUCED AUDIO MATERIALS

Audio materials can easily be produced to help your students meet the objectives. Special instructions, guest presentations, and student dramatizations are valuable and inexpensive additions to commercially available materials.

ILLUSTRATIONS

Evaluation:
Name musical notes or instruments recorded on tape.
Identify correct application of human relations principles in recorded dialogue.

Practice:
Imitate the pronounciation of the recorded Navajo language sounds.
Analyze political speeches for use of propaganda techniques.
Record a dramatization illustrating courtesy rules.

Presentation:
Examine leaves while listening to audio tape describing characteristics.
Listen to specially recorded tape of police chief talking about safety.
Record narration to accompany student-produced slide set.

FOR ADDITIONAL INFORMATION, SEE PAGE 186.

Carefully consider the use of audio media in combination with other instructional media.

Objects . . . . . page 116
Still Pictures . . . . . page 118
Motion Pictures . . . page 122
Written Materials . . . page 126

If you have not completed the selection of media for all three phases of the instructional process, turn to the pages indicated and complete those phases that remain.

Evaluating Student Performance . . . . . page 110
Providing Practice . . . . . page 112
Presenting Information . . . . . page 114

When you have completed all three phases, turn to page 166 and fill out the "Instructional Strategy and Media Selection Worksheet."

THE USE OF WRITTEN WORDS AND SYMBOLS IN INSTRUCTION

If you feel that the use of written words and symbols would help your students achieve the instructional objectives, your task now is to select the most useful means of making the required written words and symbols available.

The are four alternatives from which to choose:

1. TEXTS AND REFERENCE BOOKS

Subject matter and grade oriented texts along with related books on the same topic are a commonly used instructional medium. Their primary value is that they provide a detailed presentation of information in an easily accessible form that can be studied at the student's own pace.

ILLUSTRATIONS

Evaluation: Find support for a particular point of view in at least one book.
Demonstrate ability to use reference materials in locating designated types of information.

Practice: Using the indexes, practice locating information on specified topics.
Read and compare viewpoints on an issue.

Presentation: Read about events leading to the Civil War.
Read three Shakespearian sonnets.

FOR ADDITIONAL INFORMATION, SEE PAGE 188.

2. WORKBOOKS

Workbooks give the student an opportunity to practice naming, apply principles, and follow procedures, in a problem presentation-written response format. Answers in the back of many workbooks allow the student to check his own progress.

ILLUSTRATIONS

Evaluation: Write analysis of case study.
Collect data and record in table.

Practice: Change singular verbs to plural.
Draw hydra observed through a microscope.

Presentation: Study detailed information on machine operation.
Obtain information on unit objectives and instructional activities.
Read material that attempts to adapt information in test to specific applications.

FOR ADDITIONAL INFORMATION, SEE PAGE 188.

3. PERIODICALS

Pictorial, up-to-the-minute information from a wide variety of viewpoints recommends the use of periodicals in a wide range of subject areas and levels.

ILLUSTRATIONS

Evaluation:
Locate news stories illustrating specified economic principles.
Locate magazine ads that illustrate each of the five propaganda techniques.

Practice:
In each pair of news items, identify the one that illustrates the principle "Right to Know."
List the arguments of opposing legislators on a given piece of legislation.

Presentation:
Study latest developments in U.S.-China relations.
Using back issues, obtain historical information on Women's Lib.
Read a variety of viewpoints about a given subject.

FOR ADDITIONAL INFORMATION, SEE PAGE 189.

4. TEACHER PRODUCED HANDOUTS

Usually duplicated in the office or at the instructional media center, handouts can be used to supply specific instructions on the instructional activities or supplemental information found in other sources. Handouts are also useful in collecting evaluation data.

ILLUSTRATIONS

Evaluation:
Identify and correct all of the incomplete sentences.
Write the names of the notes on the treble staff.
Give an example of each of the concepts listed.

Practice:
Practice identifying Hemingway's style in a series of literary excerpts.
Select the problems for which Chi square would be appropriate, then solve them.
Fill in the blanks in the sentences with the correct adverbs and adjectives.

Presentation:
Read how World War II caused industry in local community to develop.
Review objectives, assignments, and evaluation procedures for unit.
Follow written recipe for French bread.

FOR ADDITIONAL INFORMATION, SEE PAGE 190.

(continued on next page)

Carefully consider the use of written words and symbols in combination with other instructional media.

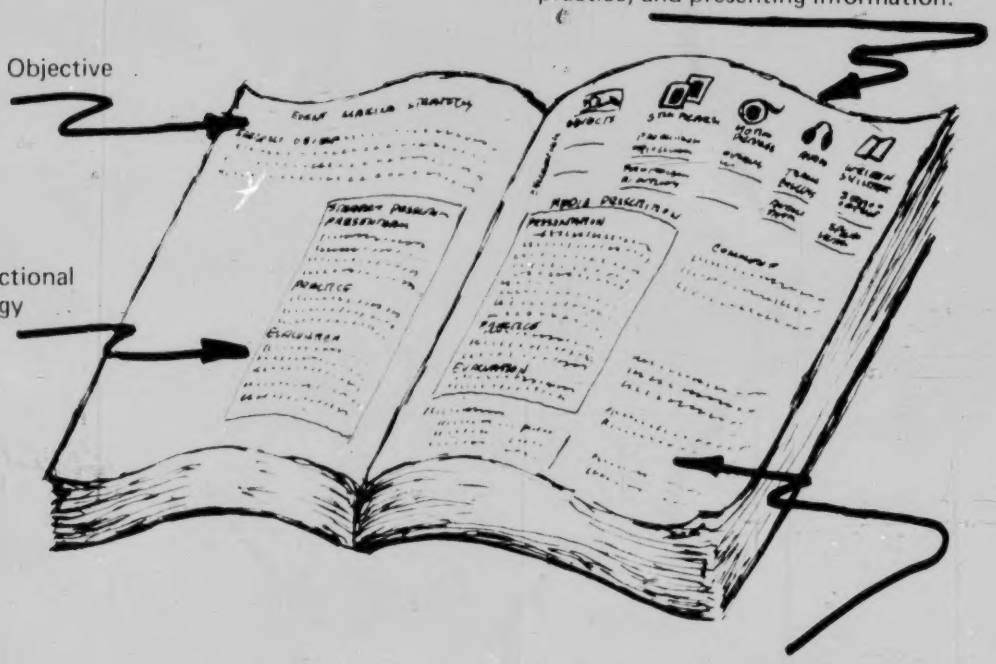
Objects . . . . . page 116
Still Pictures . . . . . page 118
Motion Pictures . . . page 122
Audio Media . . . . . page 124

If you have not completed the selection of media for all three phases of the instructional process, turn to the pages indicated and complete those phases that remain.

Evaluating Student Performance . . . . . page 110
Providing Practice . . . . . page 112
Presenting Information . . . . . page 114

When you have completed all three phases, turn to page 166 and fill out the "Instructional Strategy and Media Selection Worksheet."

A summary of the use of five types of media in evaluating student performance, providing practice, and presenting information.



Examples of the use of specific media for presenting the instruction, evaluating performance providing practice, and presenting information.

SAMPLE MEDIA PRESCRIPTIONS

On the following pages, you will find two sample media prescriptions for each of the nine instructional strategies. Each sample prescription is based on the objective and instructional strategy first used in Step Four of this manual, "Write Strategy Prescriptions."

In developing these examples, the following procedure was followed:

First, the requirements of the **objective** and **instructional strategy** were reviewed.

Second, each of the five types of instructional media objects, still pictures, motion pictures, audio media, and written words and symbols) were considered in terms of evaluating student performance, providing practice, and presenting the information required.

Third, specific types of instructional media were selected and their uses determined.

EXAMPLE LOCATOR FOR THE SAMPLE MEDIA PRESCRIPTIONS

COGNITIVE	PSYCHOMOTOR	AFFECTIVE
Object Naming . . . .pps. 130 & 132	Self-Paced . . .pps. 146 & 148	Motivation or Interest pps. 158 & 160
Event Naming . . . . .pps. 134 & 136	Mixed-Pace . .pps. 150 & 152	Attitude or Value pps. 162 & 164
Classification . . . . .pps. 138 & 140	Externally Paced . . . .pps. 154 & 156	
Rule Using . . . . . .pps. 142 & 144		

SAMPLE: Cognitive, Naming

1. **Write Your Objecitve**

   Audience: *The 7th grade student*

   Behavior: *will name the lines and spaces of the treble staff in musical notation*

   Conditions: *when notes are presented in any order.*

   Degree: *Satisfactory performance is the ability to name a note in two seconds or less.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *naming*

4. Write Your Strategy Prescription:

   Comments

Presentation

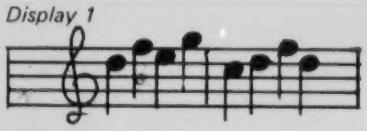
Give objective to the student.

Indicate why naming the lines and spaces of the treble staff is necessary for sight singing or instrument playing.

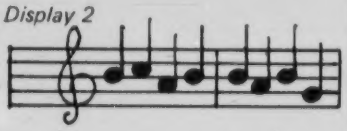
Demonstrate performance using display similar to that shown for evaluation below.

Practice

Display 1



Display 2

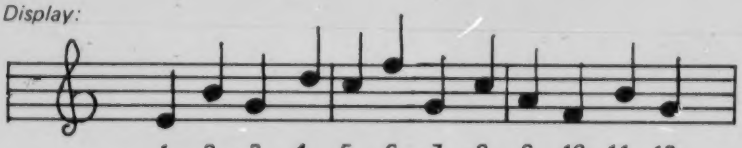


Response: Names of notes d, f, e, g, c, d, f, d, etc.

Directions: When I say a number, you say the name of the corresponding note. After you respond, I will say OK or NO and then say the next number. Repeat with display 1 until you can say every note in less than 2 seconds with no errors. When you have mastered display 1 go on to display 2, etc.

Evaluation

Display:



1 2 3 4 5 6 7 8 9 10 11 12

Response: Names of notes, e, b, g, d, c, f, g, etc.

Directions: When I say a number, you say the name of the corresponding note.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Piano, other musical instrument	_____	_____	Musical notes, discussion	Musical notes and treble staff
Practice	_____	_____	_____	Feedback to students	Musical notes, treble staff, code messages
Evaluation	_____	_____	_____	_____	Treble staff and notes

5.b. Prescribe the media you **will** use.

Presentation:

Project overhead transparency of a musical score and play the notes on a piano or other musical instrument. Point out the association between the musical notation and the sounds. Discuss the importance of being able to quickly identify notes on a musical staff. Discuss the use of flash cards and games to be used in learning to identify the notes and tell students how they will be evaluated in terms of the objective. Using another overhead transparency, project a sample score on which they will be tested.

Practice:

Provide sets of flash cards for students to use in groups of two. The first set of flash cards would have single notes on each card, intermediate sets would have two or three notes, and the advanced set would have ten or twelve. The sequence of the notes would be written out in letters on the back of the card so the second student could check the first student's responses.

A self-check game could require decoding a simple message written in the letters A through G in musical notation and a sufficient number of other printed letters.

Evaluation:

The test would consist of a card with ten or twelve notes randomly assigned on a treble staff. Each note is numbered. One person in each pair (a tester) calls out a number. The student being tested names the note within two seconds. Tester keeps track of the number of correct responses and errors.

Comments

Overhead transparencies can magnify an image so that everyone can easily see it. Transparencies also make possible the use of a number of sample musical scores in a very short period of time.

Flash cards approximate the final test while allowing isolation of individual notes for repeated practice. The musical notation game can be played on an individual basis for motivational purposes as well as practice.

The test could be presented by an overhead transparency or on a printed handout. This final test should appear similar to the sample tests the students saw during the presentation.

For additional information on:
Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Cognitive, Naming

1. **Write Your Objective**

   Audience: *The 6th grade student*

   Behavior: *will identify and name the principle parts of the human eye including the following: cornea, iris, pupil, retina, lens, vitreous body, optic nerve, and fovea*

   Conditions: *when shown a diagram illustrating the eye.*

   Degree: *He should name and correctly identify each of the parts listed in one minute or less.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *naming*

4. Write Your Strategy Prescription:

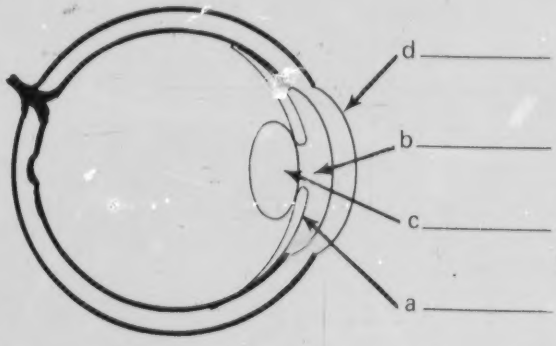
Comments

Presentation

Give objective to student.

Indicate why eye is important. Use analogy with camera.

Demonstrate naming of parts on picture, diagram, or model. Introduce mneonic aids to help the student remember novel words, e.g., cornea = crown around opening, etc.



Practice

Display 1	*Display 2*
Picture with arrows only to iris, pupil, lens, cornea, labeled a, b, c, etc.	*Same picture with new arrows and five new locations, labeled a, b, c, etc.*

Response: Names: iris, pupil, lens, cornea, etc.

Directions: Practice naming each part in display 1 until you can name each part without hesitation. Then go to Display 2, etc. Correct names are filled in on back of each display. Think about the correct name each time you look back. Do not go immediately to the next item.

Evaluation

Display: *Different picture here with new arrows labeled a, b, c, etc.*

Response: Part names: iris, pupil, lens, etc.

Directions: Refer to the chart. Write the name of each part of the eye opposite the appropriate number on the answer sheet. You have one minute.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Simple camera, model of eye.	Overhead transparencies of eye camera.	_____	Discuss parts of eye.	Names on transparencies and handouts.
Practice	_____	Drawing of eye	_____	Feedback on student responses.	Name of eye parts for self-check.
Evaluation	_____	Drawing of eye.	_____	_____	Student writes names on response sheet.

5.b. Prescribe the media you **will** use.

Presentation:

Discuss camera parts, show overhead transparency of how a simple camera works, explaining the relationship between lens, subject and the film. Also illustrate the function of the diaphragm. Display transparency of eye cutaway showing the relationship between the lens, subject, and the retina. Discuss the function of the iris. Using an overlay on the transparency, add the names of eye parts and explain their function while students take notes on a handout drawing of an eye.

Practice:

Using the same overhead transparency of the eye as in the presentation, place small arrows cut out of paper on transparency pointing to the iris, pupil, lens, and cornea. Ask students to name these parts. Change the arrows to point to another set of eye parts and have the students name them.

Have an enlarged eye displayed on the bulletin board with names of the parts covered by flaps of paper so the student can check his knowledge after he guesses the name.

Provide students with drawings of the eye whose parts are named and numbered on the reverse side so they can check themselves. Have students work in pairs to practice naming parts.

Evaluation:

Provide each student with a picture of the eye with numbered arrows pointing to the parts mentioned in the objective. Within the specified time limit, have students write the names of each of the parts.

Comments

The overhead transparency provides a greatly enlarged view of the eye, and the overlay facilitates the task of presenting the names of the parts. During the presentation, students could write the part names on a handout drawing of the eye.

Use overhead transparency for group practice and bulletin board drawings for individual practice. Bulletin boards and drawings facilitate practice over a period of time.

To eliminate the possibility of hidden hints, have numbers assigned to each of the parts of the eye in an order different than that used in presentation and practice.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Cognitive, Event Naming

1. **Write Your Objective**

   Audience: *The eighth grade student*

   Behavior: *will recognize or list the significant facts associated with each event in a series of episodes which helped lead to the start of the Civil War*

   Conditions: *when given the name of that event.*

   Degree: *Acceptable performance is remembering 75% of the significant facts for 80% of the events.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *event naming*

4. Write Your Strategy Prescription:

   Comments

Presentation

Objective: Indicate to the student that he is to remember the major events leading to the Civil War.

List the events on a time line. Summarize each event. Other structuring devices such as geographic location may help the student.

Indicate importance of knowing these events as a means of understanding current affairs.

One by one, describe or portray each event. List the significant details that the student should remember.

Practice

Following each day's portrayal of the event, recap the significant features. Start each recap with questions focusing attention on the significant details to be remembered. Have the student respond to the questions. List details to be remembered on a time line or other relevant structure.

Care should be taken to relate abstract labels clearly and unambiguously to detailed representations. Use such memory assist procedures as directing students to "close your eyes and try to picture the scene at Fort Sumpter in your mind."

Evaluation

Multiple choice test. Stem indicates event, alternatives indicate details which student should associate with the event.

Criterion: Four out of five details for each event. Knowing details of one event will not substitute for ignorance of another event.

Part II of the exam presents details of each event on list and asks the student to order them in sequence. Score indicates closeness of correspondence to correct sequence. This same procedure could be used for entire set of major events.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	_____	Professional or student drawings	Overview of events.	Teacher-led discussion.	Section of text teacher-prepared handout.
Practice	_____	Professional or student drawings.	_____	Audio tape, recording student discussions.	Specially produced handouts.
Evaluation	_____	_____	_____	_____	Written multiple choice tests.

5.b. Prescribe the media you **will** use.

Presentation:

Teacher introduces the unit on the Civil War with a motion picture or filmstrip, and develops a time line of events preceding the war on the chalkboard or overhead transparencies. The time line consists of dates, names of places, key words, and a very simple illustration to help the students remember the event. The teacher also describes the importance of remembering events.

Students read about events preceding the war, and listen to student or teacher produced "You Are There" type programs dramatizing the specific events leading to the attack on Fort Sumpter.

Comments

The motion picture would provide an attention compelling introduction to pre-Civil War events. The time line is used to assist the organization of thinking and to help students remember the event.

Practice:

At the beginning of class sessions, draw and label the time line on the chalkboard or overhead transparencies. Then ask questions about events on the time line and list details of events following student responses.

Provide practice self-tests with details leading to the Civil War as well as unrelated events. Students practice identifying and ordering events in proper sequence.

The chalkboard allows a great deal of flexibility on the part of the teacher, while an overhead transparency can be used to project a sequence of organized material.

Evaluation:

Student evaluation could most easily be conducted through the use of a teacher-made and duplicated written test.

Because of the way the objective is stated, the use of media, other than printed test, would not be necessary.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Cognitive, Event Naming

1. **Write Your Objective**

   Audience: *The eighth grade student*

   Behavior: *will list the steps in the recipe for making white sauce; or, demonstrate making white sauce in a dry run*

   Conditions: *when given only paper and pencil, or when given an assortment of materials.*

   Degree: *All steps must be indicated in the proper sequence.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *event naming*

4. Write Your Strategy Prescription:

   Comments

Presentation

Objective: Tell the students you are going to teach them the recipe for white sauce.

Demonstration: Go through the steps with actual materials. Clearly identify each step as you proceed. Stress importance of remembering each step and getting steps in correct sequence.

Motivation: Point out that white sauce is a basic foundation for many recipes. It is really inconvenient to look up the recipe each time you use it, etc.

Practice

Organizing Scheme: Stress that three main steps can be remembered by phrase, "Butter-flour-milk."

Review steps: 1. Melt butter. 2. Add flour and seasonings until bubbly. 3. Remove, add milk. 4. Bring to boil.

Dry run once with steps written out, once without written steps, but naming the step prior to carrying it out.

Make sauce using materials.

Evaluation

Directions: List steps in making white sauce

OR

Directions: Using assembled materials, demonstrate a dry run procedure for making white sauce.

Criterion: The student remembers each step in proper sequence.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Demonstrate procedure.	Drawing of a "butter-flour-milk" flower.	_____	_____	Recipe on chalkboard, overhead transparency.
Practice	Actual materials.	Drawing of a "butter-flour-milk" flower.	_____	_____	Recipe in notebook.
Evaluation	Actual materials.	_____	_____	_____	Student writes steps.

5.b. Prescribe the media you **will** use.

Presentation:

Teacher demonstrates and discusses the procedures for making white sauce while listing the steps on the chalkboard or an overhead transparency. Students copy recipe and take additional notes as the demonstration is conducted.

To help students remember the ingredients, display an exaggerated drawing of a large flower consisting of white petals, surrounding a cube of butter, a sack of flour, and a bottle of milk.

Comments

The same results could be achieved with slides and tape recorded narration and a bulletin board.

Practice:

Have the butter-flour-milk "fun flower" prominently displayed. On the bulletin board, display cut outs of elements and details of steps involved for review at student's leisure. Practice arranging actual elements and utensils in proper order and discuss what happens during each step.

A parctice session could include actually making and tasting the sauce.

Actually making the sauce is valuable but expensive. Best preceded by a dry run including a description by student of procedures.

Evaluation:

Least expensive means of evaluation would be to have the students list the steps involved. The most useful evaluation, in terms of the objective, would be to have the students arrange actual objects in the correct sequence and discuss the steps involved at each point.

The actual arrangement of the materials in sequence would be highly desirable, if you can afford the time.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Cognitive, Classification

1. **Write Your Objective**

   Audience: *The junior high school science student*

   Behavior: *will label clouds as being cirrus, stratus, cumulus or nimbus*

   Conditions: *when shown actual cloud formations or pictures of them.*

   Degree: *He should be 100% correct on all easy examples and at least 50% correct on the more difficult or ambiguous examples.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *classification*

4. Write Your Strategy Prescription

   Comments

Presentation

Objective: Tell the student he is going to learn to identify different types of clouds.

Show a set of four pictures, one of each type. Name each type. Show line drawings which emphasize relevant characteristics. List the characteristics of each type.

Explain how cloud types help with weather prediction.

Practice

Practice	*Display*	*Feedback*	*Display*
Picture	*Picture*	*Drawing*	*Drawing*

A set of twenty pictures, each of a different kind of cloud. Across page a set of line drawings emphasizing the relevant characteristics.

Response: Appropriate cloud type.

Directions: Name each type of cloud. Tell why the name is appropriate by pointing out distinctive characteristics. After your responses, I'll show you a drawing to help you distinguish the features.

Evaluation

Display: Pictures of clouds (1-2-3 type)

Picture	*Picture*	*Picture*	*Picture*
1	*2*	*3*	*4*

(not used during class)

Response: Write name of cloud type

Directions: You will be shown some pictures of cloud formation. Write the type of cloud pictured opposite the number on your answer sheet.

Criteria: The test should contain at least 12 pictures. Four of the items are very difficult to discriminate.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	_____	35mm slides, mounted flat pictures, chalkboard	_____	Discuss pictures, narration for slide set.	_____
Practice	Actual clouds	35mm color slides, mounted flat pictures	_____	Audio tape narration for slide set.	_____
Evaluation	_____	35mm slides, mounted flat pictures.	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:

The teacher projects slides showing examples and non-examples of each of the clouds listed. The use of two slide projectors at the same time would be helpful to show contrasting examples and non-examples. Project slides onto the chalkboard and using chalk, trace the distinguishing characteristics on the chalkboard.

For individual study, student could view a slide set that presents a number of examples and non-examples of each of the four types of clouds and discusses the distinguishing characteristics. A number of slides of each cloud could also be provided for practice.

Practice:

Allow students to work individually with slides and flat pictures of clouds. Slides could be numbered and used with a printed key containing the name of each of the clouds so the students can check their identifications.

Evaluation:

Present a series of 35mm slides or mounted flat pictures the student hasn't seen before. Use easy and difficult examples. Have students write the names of each of the clouds on a response sheet.

Comments

35mm color slides would provide an inexpensive means of displaying high quality color representation of clouds for prolonged study.

The use of the chalkboard provides a means of isolating relevant characteristics.

The audio tape would be used to direct attention to the distinguishing characteristics of the four types of clouds illustrated on the slides.

Make certain that a wide-range of both examples and non-examples are supplied. Drawings would also be useful in distinguishing between the relevant attributes of the four types.

The one critical element here is to be sure the student hasn't previously viewed the pictures used.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Cognitive, Classification

1. **Write Your Objective**

   Audience: *(Audience inferred)*

   Behavior: *be able to correctly identify the following activities: goal, direct kick, indirect kick, dribbling, heading and off-side,*

   Conditions: *when viewing a soccer match or representation of such a match.*

   Degree: *All obvious instances will be recognized, and at least 2/3 of the borderline instances correctly identified.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *classification*

4. Write Your Strategy Prescription:

   Comments

Presentation

Indicate that the students are to identify various activities of a soccer game. List the name of each of the activities to be identified and describe the event.

Following each description, show a slow motion segment of each event. Call attention to the relevant movements and actions involved.

Point out why being able to correctly identify each activity is important for a referee or a coach.

Practice

Display: Show three game segments which illustrate correct activity, and two incorrect, but potentially confusing events. Slow motion should be used during early stages of practice. Later, the student should identify the activities in real time. Repeat until each event is practiced at least three or four times.

Response: Name the activity and indicate whether or not it was correctly executed.

Directions: During each segment I show you, name the activity and indicate whether or not it was correctly executed. If not, why not?

Evaluation

Display: Representation of segments of soccer game illustrating various activities. Point out a player by number and ask the student to name the activity.

Response: Name event components of the soccer game.

Directions: I will show you a series of segments of a soccer match. During each, you are to designate the activities of the designated player(s).

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Live demonstration	Photographs	Film clips	Verbal explanation during demonstration & film clips.	Written descriptions with still pictures.
Practice	_____	Photographs	Film clips	Verbal feedback.	_____
Evaluation	_____	_____	Film clips.	_____	_____

5.b. Prescribe the media you **will** use.

Presentation

Have a few students demonstrate each of the soccer activities. Project motion pictures of each event at regular and slow speed while pointing out the relevant characteristics.

Practice:

Show a number of short motion picture sequences and have class members identify activities illustrated. When one is identified, rewind the film and have a student describe the relevant characteristics of that activity.

Evaluation:

Show film sequences the class hasn't seen before and have students list in sequence activities that a designated player engages in. Or, divide the film into a number of separate events. While projecting a short sequence, call attention to a particular player and have the student write down the activities that player engages in.

Comments

While not under game conditions, demonstrations could be used inexpensively to illustrate the relevant characteristics of each of the soccer activities. The 8mm motion pictures make possible the repeated detailed study of each activity in both normal and slow motion.

Student access to the 8mm film loops provide an opportunity for repeated viewings of each play. Make your super 8mm film loops demonstrating each activity in isolation and then combined with other events in a series.

Film clips permit both individual and group viewing of the necessary materials.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Cognitive, Rule Using

1. **Write Your Objective**

   Audience: *High school science students*

   Behavior: *will use Ohm's Law to determine either the voltage, current or resistance in a DC current*

   Conditions: *when given any two of the values.*

   Degree: *Both the answer and the sequence used in solving problems must be correct.*

2. The Domain is: *cognitive*

3. The Appropriate Strategy is: *rule using*

4. Write Your Strategy Prescription:

   Comments

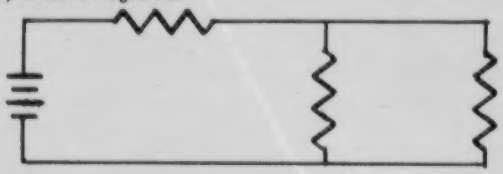
Presentation

State Ohm's Law (E=IR). Show a circuit diagram. Indicate that the student will be able to calculate either resistance, voltage, or current when given two of the other values for a given circuit. Explain the circuit illustrated. Show step by step solution and operations required for each step.

Tell the story of Ohm's struggle for recognition. Testify of the power of this simple law in all electronics. Cite examples of very complex circuits where the law still holds.

Practice

1. *Assess component concepts; voltage, amps, resistance.*
2. *Display circuit diagrams.*

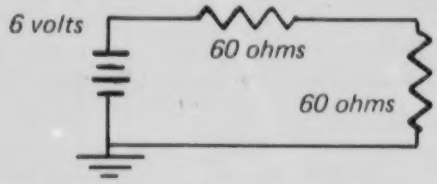


Response: the volts, ohms, or amps involved.

Directions: determine the current (voltage, or resistance) of the following circuit. After each problem we will show you the correct procedure.

Evaluation

Display: A circuit diagram



Directions: Determine the current draw of the following circuit (or voltage or resistance).

Response: A number indicating amps, volts or resistance in ohms.

Criteria: 1) Formula correctly written for problem involved; 2) correct answer.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Electrical equipment.	Diagram of electrical circuit.	_____	Discussion by teacher	Labels on circuit diagrams, written discussion.
Practice	Electrical equipment.	Diagram of electrical circuit	_____	_____	Problems.
Evaluation	_____	Diagram of electrical circuit	_____	_____	Problems.

5.b. Prescribe the media you **will** use.

Presentation:

Provide a variable power source, a number of light bulbs to provide variable resistance and the appropriate electrical meters. Have students record the voltage, ohms and amps as each one of the three elements is varied, and using the formula, demonstrate how the same values can be determined mathematically.

Practice:

Pretest with a written quiz to see if students understand resistance, current, and voltage. Provide remedial instruction for those who do not. Make the electrical apparatus used in the presentation available to students for validating answers to practice problems. Provide a number of different circuit diagrams with two out of the three elements given. Make solutions and answers accessible to students so they can check both their application of Ohm's law formula and the answer.

Evaluation:

Provide students with several circuit diagrams that were not used during the practice or demonstration sessions.

Comments

If effectively carried out, such a demonstration can be motivational and will help the student to more fully understand and remember Ohm's law.

Confirming their results using the electrical apparatus provides a means of positive verification of an abstract rule.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Cognitive, Rule Using

1. **Write Your Objective**

   Audience: *High school English students*

   Behavior: *will write a Shakespearean sonnet in correct form, having 14 lines, 3 quatrains and one couplet with an abab, cdcd, efef, gg rhyme and iambic pentameter,*

   Conditions: *using a theme of their own choice.*

   Degree: *The sonnet will be judged by student judges on the following points: appropriateness of the message and flow of thought.*

2. The Domain is: *cognitive*

3. The Appropraite Strategy is: *rule using*

4. Write Your Strategy Prescription:

   Comments

Presentation

Read a typical Shakespearean sonnet.

List its peculiar characteristics, i.e., 14 lines, 3 quatrains, 1 couplet, rhyme scheme: abab, cdcd, efef, gg, meter: iambic pentameter. Indicate that the students are going to learn to write such poems.

Choose a theme. Spend a class period writing a sonnet for your students. Point out ways to find rhyme, control meter, etc., as you proceed. Point out some errors you could have made and how you corrected them.

Point out the special message such poems carry. Illustrate with other examples of sonnets.

Practice

Test prerequisite concepts such as iambic meter, rhyme, quatrains, couplets, etc.

Assign students to read and correct several poorly written sonnets which have errors in rhyme or meter.

Assign students to write two or three sonnets, each on a different theme and in a different meter.

Provide detailed feedback after each attempt pointing out where it was correct or incorrect in form. Point out some common mistakes such as nonmetered lines, inappropriate rhyme schemes, and nonrhyming lines.

Evaluation

Assign students to write another sonnet on a theme of their choice.

Have the student-produced sonnets judged by student committees. Judge on both form and message.

Criteria: Provide each judge a checklist listing the form characteristics with a five-point scale for each. Also indicate criteria for judging the message.

5.a. What media could you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	_____	_____	_____	_____	Well written and poorly written sonnets.
Practice	_____	_____	_____	_____	Well written and poorly written sonnets
Evaluation	_____	_____	_____	Tape recorded feedback.	Sonnets written by students

5.b. Prescribe the media you will use.

Presentation:

Read a number of typical Shakespearean sonnets on projected overhead transparencies. Using a felt-tipped pen or grease pencil to attribute isolation, underline, point out the 14 lines, three quatrains, one couplet, the rhyme-scheme, and meter. With the help of the class, write an original sonnet on an overhead transparency or the chalkboard.

Comments

Projecting the sonnets allows you to point out the important characteristics for your class members. Pass out copies of the sonnets projected on the screen to be used for note taking.

Practice:

Pass out printed copies of a sonnet to all students. Have them perform an analysis individually; then using an overhead transparency, identify its critical attributes.

Have students analyze a number of well and poorly written sonnets and identify the relevant characteristics, qualities, and inadequacies. Supply a printed analysis of the critical attributes that allows the students to check their analysis against yours.

Assign the students to write a sonnet to be reviewed by one or two other class members before it is handed in. Prepare a checklist for class members to use in evaluating.

Using audio cassettes, provide feedback to students in the form of detailed comments and suggestions.

Evaluation:

Assign students to write one or more sonnets on themes of their choice. Other students will evaluate them using a check list you have prepared. Give each writer additional feedback by means of a cassette tape recorder. With the class, discuss general problems in both the writing and evaluation of sonnets.

Note the use of audio cassettes in both practice and evaluation to provide detailed feedback on a complex task.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Psychomotor, Self-paced

1. **Write Your Objective**

   Audience: *Third grade students*

   Behavior: *will write the letters d, b, g, and p, using cursive handwriting*

   Conditions: *given lined paper and a pencil.*

   Degree: *Each letter will be well-formed and created with a single smooth stroke.*

2. The Domain is: *psychomotor*

3. The Appropraite Strategy is: *self-paced*

4. Write Your Strategy Prescription:

   Comments

Presentation

Show the student examples of correctly formed letters.

Show him how to write them by allowing small groups of students watch over your shoulder.

Show him the checklist and examples of poorly formed letters.

Review correct way to hold the pencil. Help individual children as necessary.

Practice

Display: Sheets where individual letters appear as dotted forms.

Directions: Connect the dots using an even stroke to form the letter p (or d, or g, or b).

After 8 or 10 prompted trials, have student form letters where only beginning and direction change dots appear. Finally, practice with no dots.

During initial trials, have well-formed samples available for instant comparison. After some practice, have them turn samples over and practice. After each letter, have them practice different letter groups.

Evaluation

Directions: In cursive, write the following letter combinations on lined paper: db, gd, pg, dp, dpg, bgd, gdp, ppg, dbd.

Checklist: Rate form of each letter 1–5 on each of the following points: incomplete lines, proper placement in lines, well-formed tail, etc.

Watch each student write two of more letter groups. Rate his form 1–5 on each of the following: holding pencil correctly, smooth stroke, speed, etc.

Keep record of each student's scores: rate another sample of these letters after 6 weeks. Show each student how he is doing against his past performance.

Criteria: A good (or 3) rating will be considered acceptable at this point.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Grease pencil	Examples of well-formed and poorly-formed letters.	_____	Teacher discussion.	Labels and arrows on bulletin board.
Practice	Pencil, paper writing guides.	Examples of well-formed and poorly-formed letters.	Single loop films.	Feedback to individual students.	Labels and arrows on practice sheet.
Evaluation	Pencil and paper	_____	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:

Using an overhead projector, large chart pad, or the chalkboard, demonstrate forming each of the letters. As you are demonstrating, have students trace the same letters on their handouts. Show examples of poorly-formed single letters. Ask the class what is wrong with them. After they respond, show a well-formed letter along side a poorly-formed letter.

Practice:

Provide practice sheets with individual letters appearing as dotted forms. Students practice by connecting the dots using an even stroke. On the advanced sheets, the dots will be reduced to just the key points. Finally, have students practice on lined paper without the dots. Supply them with sheets having well formed samples for comparison. Indicate the direction of the stroke with small arrows.

Evaluation:

Have students write the letters specified in the objective in various combinations on lined paper. Evaluate the form with a check list.

Comments

Write with a grease pencil or felt-tipped pen on a clear sheet of acetate on the overhead projector. Letters will be greatly enlarged for the students and they will see how you hold your pencil.

Simple teacher-produced 8mm loop films on each of the letters could prove a tireless model of the correct stroke.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Psychomotor, Self-paced

1. **Write Your Objective**

   Audience: *Typing class students*

   Behavior: *will learn to type the letters A, S, D, F and J, K, L using correct hand position*

   Conditions: *on a standard typewriter keyboard.*

   Degree: *The student will be ready to proceed to the next objective when he can type all these letters in any specified order without error, at the rate of 5 letters per second.*

2. The Domain is: *psychomotor*

3. The Appropraite Strategy is: *self-paced*

4. Write Your Strategy Prescription:

   Comments

Presentation

Show the students correct hand position.

Type each of the letters showing how to strike the keys. Also show how the thumb strikes the space bar.

Indicate the criteria for this lesson and demonstrate the speed required. Demonstrate a timed test.

Stress importance of looking only at text, not at the keys or typed copy.

Practice

Drill 1: While all students sit at their typewriter, have them press the key you call out in unison.

Drill 2: Have students type the letters, in order, FDSA JKL, then in reverse order. Repeat each drill until 3 correct attempts. Have each student correct each drill after he finishes.

Drill 3: Have students type alternate order, such as FJDKSLA, etc.

Drill 4: Have students type lists of words and syllables made up of these letters.

Drill 5: Using a metronome, pace the typing of word lists.

Evaluation

Give a series of 3 timed tests, each consisting of 20 words made up on combinations of these letters. Score is number of errors and letters per second.

Criterion: No errors; 5 letters per second.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Typewriter	Flat pictures, slides, or overhead transparencies	Television camera & monitor.	Teacher comments.	Captions for pictures.
Practice	Typewriter	Photographs, chart of keyboard	8mm film loops.	Feedback to students.	Captions for pictures.
Evaluation	Typewriter	_____	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:

Teacher demonstrates the correct hand position, and how to strike each of the letters specified and the space bar. Picture transparencies or slides could be used to show hand positions.

Practice:

Photographs of correct hand position could be used as models for student performance.

Evaluation:

Students demonstrate that they can type letters in a specified order at a rate of five letters per second.

Comments

A portable television camera and monitor would make it possible for the entire class to watch and imitate the teacher while at their typewriters.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Psychomotor, Mixed-pace

1. **Write Your Objective**

   Audience: *Early grade school children*

   Behavior: *will hit a softball with a bat*

   Conditions: *when balls are slow pitched through the strike zone.*

   Degree: *Acceptable performance is hitting one out of three.*

2. The Domain is: *psychomotor*

3. The Appropraite Strategy is: *mixed-pace*

4. Write Your Strategy Prescription:

   Comments

Presentation

Show how to stand and hold the bat ready for a pitch.

Show how to swing and follow through.

Hit some balls.

Stress importance of watching the ball.

Tell the child he will learn to hit at least 1 out of 3 slow pitches.

Practice

Drill 1: Place ball on an adjustable flexible stand. Have the student practice knocking the ball off the stand. Practice with 5 or 6 balls at 4 or 5 various heights, then with a series of swinging at a different height.

Drill 2: From a short distance, pitch slow balls to the student while he practices hitting. As he masters one distance, move back until eventually you are at an appropriate distance. During both drills, stress watching the ball, correct follow through swing, and correct stance and bat holding.

Evaluation

Stimulus: The instructor will pitch 10 slow balls across the plate.

Response: The youngster will be instructed to hit as many pitched balls as he can.

Criterion: 3 hits will be scored as acceptable.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Softball bat and ball.	_____	_____	Teacher comments on demonstration.	_____
Practice	Softball bat and ball.	_____	_____	Teacher provides feedback to students	_____
Evaluation	Softball bat and ball.	_____	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:

Teacher demonstrates hitting the ball, calling attention to the critical points of the process as he does so. With an experienced student acting as a model, the teacher positions each student behind the catcher so everyone can observe the hitting process from another point of view. Teacher calls attention to the strong and weak points of each swing. Some problems should be purposely exaggerated by the batter.

Practice:

Place ball on adjustable flexible stand and have students practice knocking the ball off the stand. (See Strategy Prescription.)

Divide class into three-man teams (batter, pitcher, and catcher). Rotate the positions, allowing sufficient time for each student to be at bat. The teacher goes from group to group making suggestions.

Evaluation:

The instructor will pitch ten slow balls across the plate. If the student hits at least three of them, he will have met the criteria (degree).

Comments

Select a model who can perform well since bad points of form might be picked up by your students.

Feedback to the batters is an essential part of the learning process procedure. Recruit assistants to help you.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Psychomotor, Mixed-pace

1. **Write Your Objective**

   Audience: *The early grade school child*

   Behavior: *will balance and ride a two-wheel bicycle*

   Conditions: *on a winding path three feet wide.*

   Degree: *He will stay on the path.*

2. The Domain is: *psychomotor*

3. The Appropraite Strategy is: *mixed-pace*

4. Write Your Strategy Prescription:

Comments

Presentation

Show student how to ride. Point out how you turn into a fall to maintain balance. Slow way down and exaggerate this corrective maneuver.

Practice

Drill 1: Have child sit on bicycle while you hold it still. Have him practice turning into fall.

Drill 2: While someone slowly walks the bike, have the child steer while you stress turning into a fall.

Drill 3: Hold up rear of bike, have student practice braking and pedalling.

Drill 4: With training wheels, have student practice riding until wheels don't catch his falls.

Drill 5: Remove training wheels and allow child to ride.

Evaluation

Have student negotiate winding path. If he rides off the path or is unable to maintain his balance, he needs more practice before being allowed on the street.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Two-wheel bicycle.	_____	_____	Teacher comments on demonstration	_____
Practice	Two-wheel bicycle	_____	_____	Teacher provides feedback.	_____
Evaluation	Two-wheel bicycle.	_____	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:

First, show the student how to ride the two-wheel bicycle, demonstrating how to turn into falls to maintain balance. Have another student skilled in bike riding demonstrate maintaining balance, pedaling, and braking while you point out what he is doing. He should slow down and exaggerate the process.

Practice:

Follow the five drills mentioned for the practice session of the Strategy Prescription. Provide constant feedback. Mix additional demonstrations with practice.

Evaluation:

Before taking student to the winding path specified in the objective, assess his ability to ride in circles, follow a curved line, and dodge a line of objects in the practice area. Also make sure he knows how to use the brakes.

When he is ready, he should be able to demonstrate that he can stay on a winding path three feet wide without riding off the path or losing his balance.

Comments

In this case no amount of pictures and other media could take the place of a live demonstration.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Psychomotor, Externally-paced

1. **Write Your Objective**

   Audience: *High school football receivers*

   Behavior: *will catch an over-the-shoulder pass*

   Conditions: *while running down field and not closely defended.*

   Degree: *They will catch one out of two such passes.*

2. The Domain is: *psychomotor*

3. The Appropraite Strategy is: *externally-paced*

4. Write Your Strategy Prescription:

Comments

Presentation

Show a series of mediated examples illustrating an over-the shoulder pass reception.

Use slow motion and point out the critical elements of timing, judging, jumping, etc. involved in the catch.

Discuss each element and stress its importance.

Stress the edge being able to catch such a pass gives your team over the competition.

Practice

Test student's ability to catch a pass when set (not running), both when facing the quarterback and when facing away.

Drill 1: Suspend the football in a sling. Have runner run, jump and snatch the football from its position. Stress timing, appropriate ball watching, etc.

Drill 2: Have the receiver practice catching over the shoulder passes while set. Back to greater distances as he acquires knack.

Drill 3: Have receiver run and receive over the shoulder passes. Gradually increase distance.

Drill 4: Put a defender on receiver and have him attempt reception while dodging defender.

Evaluation

Best evaluation would be number of such passes caught in actual game situation.

Reasonable simulation involves scrimmage practice where a play can be executed and observed under a variety of conditions.

A coach should observe each attempt and indicate what components are weak.

5.a. What media could you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Demonstration	_____	Motion pictures	Discussion	_____
Practice	Practice catching passes	_____	_____	Feedback to students.	_____
Evaluation	Demonstrate Achievement.	_____	_____	_____	_____

5.b. Prescribe the media you will use.

Presentation:

Using a self-made 8mm motion picture, show first in slow motion and then at normal speed, a number of examples of a player catching over-the-shoulder passes while running down field. Back up when necessary and repeat.

On the field, have two skilled students demonstrate catching the over-the-shoulder pass.

Comments

The use of films allows you to slow down and stop the action while discussing the critical attributes. It can also provide almost endless repetitions of the demonstration from a closeup perspective.

Practice:

During the practice session, it would be helpful if a portable videotape recorder, camera, and monitor were available. While students are practicing catching the ball, they could be videotaped, comments could be recorded on the videotape sound track, and the tape could be played back immediately after each catch.

A videotape recording would provide the most useful feedback. It allows the student to observe his strong and weak points after every performance.

Evaluation:

Observe the catching skill of passers under a variety of conditions. The criterion for this objective is to catch one out of every two such passes attempted when not closely defended.

For additional information on

Evaluation ..... p 110
Practice ..... p 112
Presentation ..... p 114

Objects ..... pps 116 & 174
Still Pictures ..... pps 118 & 176
Motion Pictures ..... pps 122 & 181
Audio ..... pps 124 & 184
Written Words ..... pps 126 & 188

SAMPLE: Psychomotor, Externally-paced

1. **Write Your Objective**

   Audience: *High school football backs*

   Behavior: *will demonstrate effective broken field running*

   Conditions: *when three or more defending players are blocking their paths.*

   Degree: *They will gain an average of 6 yards per play over a series of 10 or more plays.*

2. The Domain is: *psychomotor*

3. The Appropraite Strategy is: *externally-paced*

4. Write Your Strategy Prescription:

Comments

Presentation

Show a series of mediated examples illustrating broken field running.

Use slow motion and point out critical elements such as faking, sidestepping, jumping, etc.

Discuss each element and stress its importance.

Point out the strength broken field running gives a team.

Practice

Pretest running, proper holding of football, faking, sidestepping a blocker, etc. Drill on weak aspects.

Drill 1: Place three or four dummies or sandbags on the field and have the back run a zig-zag pattern through these obstructions. Stress various critical moves during this practice.

Drill 2: Have back stand still and try to dodge a tackler by sidestepping or faking.

Drill 3: Have back run and dodge one defender.

Drill 4: Add 1 defender, then 2, while back practices broken field running.

During all practices, point out ways back could improve his pattern. Allow him to watch himself if possible.

Evaluation

Best evaluation would be yards gained per attempt in actual game situation.

Reasonable simulation involves scrimmage practice where the play can be executed and observed under a variety of conditions.

Every attempt should be carefully observed or recorded for diagnosis of the performances.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Demonstration	_____	8mm films.	Discussion of critical elements.	_____
Practice	Students practice.	_____	_____	Feedback	_____
Evaluation	Students perform.	_____	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:

Show a number of 8mm film sequences of broken field running. The first in the series would not include any opposing players, but the next two or three would have opposing players standing still to illustrate faking and sidestepping. The following two or three would show minimum interferences, and the final set would be taken in an actual scrimmage.

Have a skilled player demonstrate broken field running while the other students stand still on the field where opposing players might be. The model should demonstrate faking, sidestepping, jumping, etc. as he progresses down the field.

Practice:

Practice according to suggestions in the strategy prescription. Videotape a performance of each student, at the same time recording your comments on the sound track, and play back the videotape for the student as soon as possible after his run.

Evaluation:

Students are observed and rated in actual game situations.

Comments

This series of filmed sequences would allow the adding of complexity step-by-step while pointing out the relevant attributes of the task.

The demonstration won't allow the detailed study that a film would permit, but would add the dimension of reality.

The use of a cassette audio tape recorder would be an inexpensive but less effective substitute for the videotape. A coach could record comments and suggestions for each student as he watched him run down the field. At the completion of the run, the student could listen to the comments while the coach is recording feedback for the next player.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Affective, Motivation and Interest

1. **Write Your Objective**

   Audience: *High school biology students*

   Behavior: *will demonstrate an increased interest in biology by coming to class early.*

   Conditions: *The teacher will leave the room open so they may come early but will not ask them to, and will not provide any special rewards for those who do.*

   Degree: *An average of 1/3 of the class will come early all year and 80% will come early at least once.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *motivation and interest*

4. Write Your Strategy Prescription

   Comments

Presentation

Discuss the importance of biology as a field.

Show some of its outstanding contributions to mankind.

Indicate your own enthusiasm for the field and why.

Express the desire that your students will develop an interest.

Do Not *tell them that their interest will be measured by coming early to class.*

Practice

Divide the text and other study materials into small segments, each with study questions and exercises. Each segment should require less than 30 minutes for the average student to complete.

Arrange a number of exciting quest projects, such as studying mitosis with a microscope, looking for microbes of some kind, etc.; growing cultures; photographing plant growth; raising rats and testing various microorganisms; study of synthetic light; etc.

Agree with students that completion of a study segment enables them to work on one of the quest projects for the remainder of the hour.

Announce that the room will be open early for those who want to undertake another quest project outside of class. Indicate that no extra credit will be given. "They're just for fun."

Evaluation

Announce that the room will be available early.

Keep a record (without telling the students) of the number who come early.

If this number increases as the semester proceeds, you will have a basis for inferring increased interest.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Plants and animal life.	Slides, overhead transparencies, bulletin board displays.	Films for large group viewing.	Teacher & resource people.	Text, workbooks, special handouts.
Practice	Plants and animal life.	Slides, film-strips, bulletin board displays.	8mm single concept loops.	Tape recordings.	Text, workbooks, handouts.
Evaluation	_____	_____	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:

In large group presentations, show films illustrating pioneers in the field of biology, pushing back the frontiers. Bring in other faculty members and resource people from the community who are, in their own way, specialists in some area of biology. Prepare attractive bulletin boards and displays of plant and animal life.

Practice:

Provide question oriented bulletin boards and displays of plant and animal life that challenge the student's understanding of the world about him. Obtain or prepare a number of slide-tape sets, filmstrips, and audio tapes on current and vital topics related to the biological sciences. Specify utilization procedures.

Evaluation:

Student interest in your displays of objects, bulletin boards and other media for individual use is an indication of your success. However, increased activity outside of class time is the primary criterion (degree).

Comments

Note the use of media here is not necessarily tied in with any cognitive objective, but provides a dynamic overview of the field of biology.

It's like selling soap and toothpaste. Dynamic, attractive packages draw customers.

Keep track of what attracts the greatest interest and make duplicate sets of items used individually. Substitute other displays and materials for the less appealing ones.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

SAMPLE: Affective, Motivation and Interest

1. **Write Your Objective**

   Audience: *High school music appreciation students*

   Behavior: *will demonstrate an increased interest in classical music by selecting a higher proportion of classical music from the record collection.*

   Conditions: *The selections will be made during a free hour when students can listen to head phones while they study. The collection will include pop, evergreen and classical selections.*

   Degree: *The average proportion of classical and evergreen selections will increase from 1:20 to at least 1:10.*

2. The Domain is: *affective*

3. The Appropraite Strategy is: *motivation and interest*

4. Write Your Strategy Prescription:

   Comments

Presentation

Describe the power and beauty of classical music.

Indicate your own interest, when you like to listen and why.

Express hope that students will develop an interest.

Do not *indicate that study hour records are being monitored or will be used to measure interest.*

Practice

Divide study materials into small segments, each consisting of materials to read; to listen; to see, etc., with accompanying questions or exercises. Be sure each segment requires 30 minutes or less.

Arrange for students who complete each segment to listen to music of their choice. Be sure the collection includes all their favorites plus yours. An option would be to allow a jazz combo or singing group to practice following completion of their work.

Make a contract with each student. Work first, then fun.

Announce the availability of music in the study hall. Describe checkout procedures.

Evaluation

Be sure students know they can check out records and listen to music during study hall.

Keep a record of the selections checked out.

Figure out the proportion each week.

The proportions should improve as the semester continues.

Don't tell students a record is being kept.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Musical instruments, musical scores.	Orchestras, bands, ensembles, soloists, conductors.	Concerts and composers.	Tapes or records.	Texts and periodicals.
Practice	Musical instruments, musical scores.	_____	_____	Records and tape recordings.	Texts, periodicals, captions for displays.
Evaluation	_____	_____	_____	Records and tape recordings.	_____

5.b. Prescribe the media you **will** use.

Presentation:

Illustrate the power and beauty of classical music with a variety of excerpts. Introduce students to orchestras and classical music groups through films of actual performances. Use bulletin boards to display pictures of instruments and scores.

Practice:

Allow students free opportunities to listen to all kinds of music in the study hall.

Provide a short, absorbing recorded introduction to each classical music selection explaining its special significance in terms of the composer and period.

Evaluation:

As prescribed in the objective, the evaluation should consist of counting the number of each type of music the students listen to during a free time period when they have the opporunity to listen to music while they study.

Comments

Records and tapes of classical music can provide low cost, high fidelity reproduction. Films effectively simulate attendance at a concert.

To make certain that students understand checkout procedures, provide them with a handout outlining the procedures.

If at least one out of every ten records listened to under these conditions is classical, the objective will have been met.

For additional information on:

Evaluation ..... p 110
Practice ..... p 112
Presentation ..... p 114

Objects ..... pps 116 & 174
Still Pictures ..... pps 118 & 176
Motion Pictures ..... pps 122 & 181
Audio ..... pps 124 & 184
Written Words ..... pps 126 & 188

SAMPLE: Affective, Attitude and Value

1. **Write Your Objective**

   Audience: *Sixth grade students*

   Behavior: *will come to value an unpolluted environment as shown by the way they discard papers and wrappers*

   Conditions: *on an outing where they are given individually wrapped candy and do not know that their paper-discard behavior is being observed.*

   Degree: *The number of papers thrown on the ground will be significantly less than during a baseline outing.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *attitude and value*

4. Write Your Strategy Prescription

   Comments

Presentation

Show some of the problems caused by pollution; contrasting unpolluted with polluted areas is especially effective.

Discuss ways each citizen can help promote a cleaner environment.

Do Not *tell students that their attitude change will be observed during the outings.*

Practice

Plan and use a cognitive strategy during which students learn the dangers of pollution, etc.

Organize a cleaning campaign where students work together to clean up a city park or some other public facility.

Conduct discussions or simulated debates on industrial pollution, pollution by home owners, etc.

Evaluation

Plan two outings as part of your other objectives. These can be to public monuments or facilities, etc.

During each outing, make individually wrapped candy or gum available to your students.

Without being obvious, count the number of wrappers thrown on the ground or floor.

Do Not *tell students this is measuring their attitude toward pollution.*

Do Not *remind students to use proper receptacles or waste disposal.*

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	Sample of school ground litter.	Slides of litter in community.	Films on pollution.	Guest speakers.	Newspaper and magazine articles
Practice	Students prompted to notice litter	Students produce a slide set.	_____	Recordings.	Articles by students.
Evaluation	Decrease in amount of litter.	_____	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:

Use a medical doctor or nurse and civic official as resource people to talk about pollution problems in the community. Present films and filmstrips dealing with the issue. Make printed materials available for individual student perusal.

Practice:

Organize a film production crew made up of students; assign some as photographers, others as writers, other as sound recording specialists. Produce a slide-sound presentation for use at the school. Filmstrips and audio tape recordings of local resource people should be accessible for individual student use.

Evaluation:

The measure of your success is the reduction of actual objects (litter) not deposited in trash cans.

Comments

Resource people can provide an added note of authority and interest. Encourage them to bring with them whatever instructional media materials they may have available.

Films and filmstrips can be used to convincingly illustrate the problem, and printed materials can provide the necessary data on which an attitude can be built.

A slide-sound presentation can be valuable in providing information on the local problem. The real value of this production, however, is in the student involvement.

For additional information on:

Evaluation	p 110	Objects	pps 116 & 174
Practice	p 112	Still Pictures	pps 118 & 176
Presentation	p 114	Motion Pictures	pps 122 & 181
		Audio	pps 124 & 184
		Written Words	pps 126 & 188

SAMPLE: Affective, Attitude and Value

1. **Write Your Objective**

   Audience: *Elementary school students*

   Behavior: *will develop respect for the American flag, as shown by folding and storing the flag properly, and by holding their hands over their hearts when the flag passes or is presented, hoisted or retrieved*

   Conditions: *during school assemblies.*

   Degree: *The students must have no knowledge they are being observed during assemblies. An average of 90% should remember to show their proper respect.*

2. The Domain is: *affective*

3. The Appropriate Strategy is: *attitude and value*

4. Write Your Strategy Prescription

   Comments

Presentation

Present well told or illustrated experiences from history where outstanding loyalty has been shown to the flag.

Discuss symbols and their importance.

Express your hope that all students will show proper respect for the flag.

DO NOT *indicate that student's behavior will be monitored during assemblies or during the posting of the colors.*

Practice

Teach how to display the flag, some history of the flag, kinds of flags, etc. using cognitive procedures.

Have the class plan a program to be presented to the rest of the school demonstrating proper respect for the flag. Their group goal should be helping other students demonstrate proper respect.

Discuss situations where proper respect has not been shown. Illustrate the consequences, both in spirit and loyalty, etc.

Evaluation

During assemblies, quickly count the number of students who show respect. **Do not** *discuss problems in this area with your students.*

Without being obvious, check the folding of the flag. Have different students assigned to hoist and retire the flag on a rotating basis. **Do not** *correct student directly for improper procedure here.*

An increase in respect from before practice to after will indicate progress toward the objective.

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	The American Flag.	Historical events involving the flag.	Flag history, flag use and respect.	Discussion and recorded talks.	History of the flag, examples of loyalty.
Practice	The American Flag.	Procedures for displaying the flag.	Procedures for displaying the flag.	_____	Captions and descriptions.
Evaluation	The American Flag	_____	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:

Display a picture of a stop sign. Point out that as a symbol it represents law and order just as though a traffic officer were at the corner. Have the group tell you what the flag represents. Show films dealing with the flag as a symbol, the meaning behind the elements in the flag, and experiences in history where outstanding loyalty has been paid to the flag. Furnish reading material concerning the flag. Make up a display of flags.

Practice:

Use a motion picture or a filmstrip to show procedures for folding and storing the flag and how to show respect for it in a variety of situations. Using a Cub Scout Color Guard, have class members rehearse ways in which respect should be paid the flag. Devise a bulletin board depicting the birth and evolution of the American flag, along with pictures showing ways of displaying it and paying respect.

Evaluation:

Afford opportunities for students to show respect for the flag when they aren't being observed.

Comments

Motion pictures are an attention compelling medium that should be quite effective for this age group. Reading material and displays could be used to provide the background information on which attitudes toward the flag could be based.

The motion picture and filmstrips could dramatically provide additional background information. Having class members rehearse ways in showing respect to the flag provides a means of getting the students actually involved in the type of behavior that you are trying to promote.

For additional information on:

Evaluation . . . . . p 110
Practice . . . . . p 112
Presentation . . . . . p 114

Objects . . . . . pps 116 & 174
Still Pictures . . . . . pps 118 & 176
Motion Pictures . . . . . pps 122 & 181
Audio . . . . . pps 124 & 184
Written Words . . . . . pps 126 & 188

INSTRUCTIONAL STRATEGY AND MEDIA SELECTION WORKSHEET

1. **Write Your Objective**

   Audience:

   Behavior:

   Conditions:

   Degree:

2. The Domain is:

3. The Appropriate Strategy is:

4. Write Your Strategy Prescription

   Comments

Presentation

Practice

Evaluation

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation					
Practice					
Evaluation					

5.b. Prescribe the media you **will** use.

Presentation:

Practice:

Evaluation:

Comments

After completing the "Instructional Strategy and Media Selection Worksheet," go to page 173, "A Final Word."

INSTRUCTIONAL STRATEGY AND MEDIA SELECTION WORKSHEET

1.

Audience:

Behavior:

Conditions:

Degree:

2. The Domain is:
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription

Comments

Presentation

Practice

Evaluation

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	_____	_____	_____	_____	_____
Practice	_____	_____	_____	_____	_____
Evaluation	_____	_____	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:	**Comments**
Practice:	
Evaluation:	

After completing the "Instructional Strategy and Media Selection Worksheet," go to page 173, "A Final Word."

INSTRUCTIONAL STRATEGY AND MEDIA SELECTION WORKSHEET

1.

Audience:

Behavior:

Conditions:

Degree:

2. The Domain is:
3. The Appropriate Strategy is:
4. Write Your Strategy Prescription

Comments

Presentation
Practice
Evaluation

5.a. What media **could** you use?

	OBJECTS	STILL PICTURES	MOTION PICTURES	AUDIO	WRITTEN WORDS/SYMBOLS
Presentation	_____	_____	_____	_____	_____
Practice	_____	_____	_____	_____	_____
Evaluation	_____	_____	_____	_____	_____

5.b. Prescribe the media you **will** use.

Presentation:	**Comments**
Practice	
Evaluation	

After completing the "Instructional Strategy and Media Selection Worksheet," go to page 173, "A Final Word."

A FINAL WORD

You have just completed Function 5 "Specify Methods," a part of Phase II "Develop" of the instructional development process. You will now be moving on to other activities in the instructional development process, but you will probably be returning again and again. Undoubtedly, you will have to reconsider some of the strategies you thought would work, substitute other strategies, re-adjust, look again at the media alternatives and then make new decisions. As you continue to develop and test prototype instructional packages, you will discover that some of your best planning doesn't always bring about the results you had anticipated. This is because instructional development is a dynamic, emerging field. Many questions cannot be answered by merely turning to the back of the book. Yet, the challenges are exciting and a great deal of satisfaction comes from designing and preparing instruction that produces measurable results.

The next phase is Function 6 "Construct Prototypes." Among other things, you will be

... Working out specifications for instructional materials and organizing them for production and assembly,

... Devising ways of evaluating the instructional materials while they are being developed, after they are completed, and during actual use,

... Actually constructing and assembling the necessary instructional materials.

These activities will be followed in later phases by the testing of the prototype materials, the analysis of results and the making of necessary revisions.

Before leaving this phase dealing with the selection of instructional strategies and media, consider again the title of this manual: *Selecting Instructional Strategies and Media: A Place to Begin.* Note that it is only "a place to begin." For this reason, many things have been left unsaid, and other things have been cut down and arranged to make a useful beginning place. As you work with the procedures outlines and continue your professional study, we know that you will soon fill in the cracks and straighten out the kinks and thus contribute yourself to the emerging body of knowledge concerning the instructional development process.

THE BEGINNING

MDM

RIG

Appendix I

SUGGESTIONS ON THE USE OF INSTRUCTIONAL MEDIA

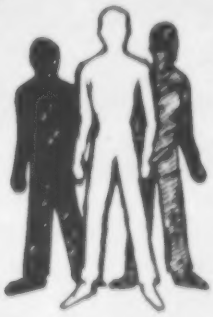
A. OBJECTS

1. The Real Things

There are many sources of "real things;" the classroom, the school, home, the community at large including local businesses and industries, and nearby colleges and universities. Take your students on a field trip to visit "real things" in their natural setting. In the classroom, use things brought in by students who collected them as their families traveled. Check with the instructional media center and with other teachers.

Display articles for individual study (protect those on loan or fragile or expensive). Provide written captions naming objects and providing relevant information. Tape record information about the objects for students to listen to while viewing and working with them. Point out distinquishing features, operations, uses, etc. In using objects for evaluation, use unlabeled examples, preferably different from those used in the original presentations and yet similar enough that the students will be able to identify and describe them or operate and use them.

2. People



You, along with other teachers and administrators, are invaluable as a demonstrator and source of objects for instruction. Use other students who have special skills as well as resource people from the community.

The student's own body may be directly involved in a great deal of instruction, particularly for skills. Also, students can observe the bodily manipulations of others acting as a model of some skill. In psychomotor skill practice, the student manipulates his own body and compares his performance with the model.

3. Models

Kits available at hobby stores and mail order houses are a rich source of great variety. Models of many different kinds are available through commercial educational supply organizations. See the instructional media center for catalogues. Models from raw materials can be constructed by the teacher and students. Constructing a model is often useful as an instructional experience when the objective deals with identification of parts, working relationships, and assembly and disassembly.

Display models with written labels and/or descriptive information. Make the model come alive by simulating the environment in a diorama. Provide tape recorded descriptions for the student to listen to as he examines the model.

In evaluation, among other things, the student could be asked to name parts of an unlabeled model, and describe the functioning and relationship of parts.

B. STILL PICTURES

1. Flat Pictures

Flat pictures can be given the student to study individually or they can be displayed on a bulletin board or projected onto a screen with an opaque projector. Use flat pictures to provide practice in the identification of whole and parts. Have students draw their own pictures illustrating characteristics of the subject. Have pictures on bulletin boards with names or written description covered by flaps of paper. After a student identifies the picture, he lifts flap to check his answer. Use pictures to stimulate creative writing. In evaluation, have students identify pictures they haven't seen before that illustrate the idea, event, or object under study. Have them describe what is happening in pictures, along with the application and misapplication of rules. Display pictures in sets around room and have students go in groups from set to set writing their answers on response sheets.

Collect potentially usable pictures from magazines, calendars, etc., and file until needed. Single pictures and sets are available from commercial suppliers. Combine elements from a number of different pictures to develop a picture that meets your needs. Preserve them by mounting and lamination if they will be handled by students. Type or print captions and descriptive materials. Bind a picture series into an accordian folder for ease of handling.

2. 35mm Color Slides

Useful slides are available commercially or can be photographed by the teacher, media specialist or students. Obtain slides from the instructional media center, museums, and parents. Teachers and students can easily produce a usable quality of slides for instructional purposes. Media specialists will be of help with technical and complex photography. Copy pictures, charts, maps, and letter titles to complete instructional slide sets, and record the narration on ¼-inch audio tape or cassettes. Add sound effects and music as desired.

Project slides for large and small group instruction. Individuals can study them using a projector or a small inexpensive viewer. Use slides for identification practice of whole things or parts. Project a sequence of slides and ask students to describe steps that were left out. Have them analyze the correct and incorrect application of rules in a sequence of slides depicting a situation or process.

3. Filmstrips

Educational suppliers have thousands of filmstrips available for purchase: check with your media specialist for catalogues. Many school and district media centers own large collections of filmstrips. Filmstrips can be produced with a **single frame** camera or by shooting 35mm slides and duplicating on 35mm film using special equipment.

To adapt commercially available filmstrips to your objectives and students, cut the individual pictures apart and mount them in cardboard slide mounts. Photograph additional pictures and record your own narration.

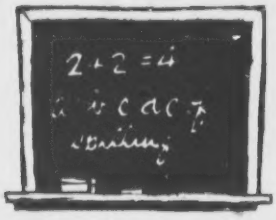
Filmstrips can be projected for large or small group use accompanied by a pre-recorded or live narration. Using a projector or an inexpensive viewer, students can study them individually.

4. Overhead Transparencies

Your instructional media center is probably a good source for overhead transparencies. A great many transparencies are also available from commercial producers. Make your own using clear sheets of acetate and colored felt-tipped pens, grease pencils, or special audiovisual pencils that project in color. Many office copy machines can be used to produce high quality overhead transparencies. Media specialists will help you with the more complex production processes.

In large and small group instruction, present line drawings, charts, lists, diagrams, and even photographs. To use the overhead projector, the classroom doesn't have to be darkened. Provide students with a paper copy of the drawings you have on transparencies so they can add notes as you work with the transparency projector in front of the class. Encourage students to use overhead transparencies to illustrate individual and group reports. For quizzes and other evaluation, project unlabeled diagrams and have students label parts on their answer sheets.

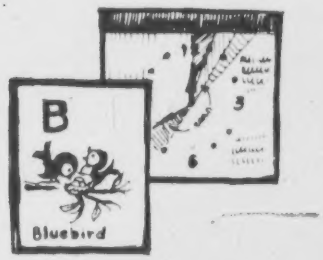
5. Chalkboard



Indispensable! If you don't have one, see your principal! Teachers and students alike can easily produce simple but useful drawings on a chalkboard. Use colored as well as white chalk made especially for use on chalkboards. If you cannot write or print legibly on chalkboard, obtain a lettering chart and **practice**. Also, practice making simple line drawings, stick figures and symbols. A chalkboard substitute can be made by taping a clear plastic sheet onto a piece of poster board and writing on it with a grease pencil.

Use along with other media to present instruction to medium and small groups. Use for information on assignments, objectives, and evaluation.

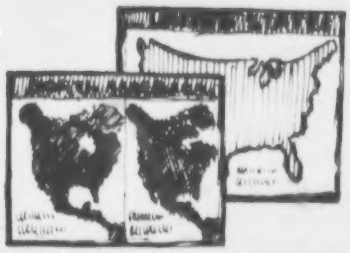
6. Charts and Posters



Many charts are available from educational supply companies. Some large commercial companies provide free charts on their products, services, and operation. Check your instructional media center to see what is presently available to you. Produce your own charts using large cardboard, butcher paper or newsprint. Write or draw with colored felt-tipped pens, grease pencils, inks and paints. Make small layout sketches before you start the full-size product. Use the opaque projector to enlarge small drawings onto large sheets of poster board. Get your students involved.

Use posters with small groups, posting them beside work or activity areas where students can refer to them during practice. During evaluation, opaque paper strips could be used to cover key labels, phrases or parts of illustrations on a poster, and students required to fill in blanks on their response sheets.

7. Maps

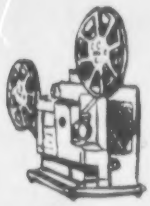


A good source of maps is a local gasoline station and the national travel department of the parent oil company. Also check the instructional media center and your downtown and university bookstores. Transfer maps to the chalkboard by first punching small holes along desired outline of paper map using a pounce wheel available at an art supply store. (You can also do this by sewing around the outline without thread in the sewing machine.) Second, dust chalk dust through the holes with an eraser to produce a map. Or you can put a small map on an opaque projector and enlarge to size tracing only desired detail.

Use large maps with medium and small size groups only. Check from back of classroom to make certain that the essential details can be easily seen. For large groups use overhead transparencies of maps. In evaluation, present maps with certain features and names covered or otherwise excluded. Have students write identifying names and labels and complete missing features on their response sheet.

C. MOTION PICTURES

1. Commercially Produced 16mm Films



Check with instructional media center for catalogs from film libraries and a list of films your school or district owns. Many state and federal governmental agencies and large businesses and industries are a good source of films available without charge: you pay return postage only. However, remember that "free films" aren't a bargain if they don't relate to your objective.

Use films at the beginning of a unit to introduce and/or at the conclusion to summarize. Use them in providing instruction on skills where motion is an important factor. Stop film at key points and discuss before continuing. Turn off sound and provide your own narration, adapting film to your objectives.

In evaluation, show a section of film depicting a process and have students describe it in greater details as it is progressing, or stop the film and have them describe the step that follows. Show section of dramatic film, stop and role play.

2. Single Concept 8mm Films

Single concept films are super 8mm films that provide a demonstration of a single skill, process, event or idea. Usually owned by the school and housed in the instructional media center, these films are useful for repetitive study by large and small groups and by individuals.

One of their greatest advantages is that students can easily run them and copies are inexpensive enough for the school to own. Single concept films are often introduced in full class sessions before being made available for small group and individual use. Many super 8mm films available in plastic cartridges automatically rewind themselves simplifying repeated viewing.

Students can view a procedure on a single concept film while practicing the behavior. In evaluation, students are asked to identify by name or description the process, objects, animals, events, or ideas depicted in the films. You could stop and ask students to describe the next events in the process or procedure.

3. Locally Produced Motion Pictures

Simple super 8mm films can easily be produced by students, a media specialist or by the teacher. Cameras are easy to use and even sound films are simple and inexpensive to produce if equipment is available. Read one or two beginning books about film-making before getting involved in production. A few tips on script, photography and editing will make your films more instructional and enjoyable. Before you start shooting the film, prepare a "story board" made up of simple drawings and brief written descriptions of what you plan to shoot. Keep your objectives clearly in mind.

Frequently, the research and planning necessary to produce a good, simple film make it a valuable learning experience for students. The involved student will not likely forget the ideas and skills learned in helping to produce a film. Depending on the objective, a film produced by students may be a product for evaluating achievement.

D. AUDIO

1. People . . . the teacher, resource people, students.

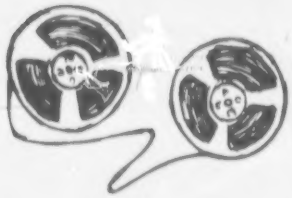
The **teacher** talking to the entire class, a small group, or an individual student is one of the most valuable and flexible media available. However, some teachers mistakenly feel that they are not doing their job unless they spend a great deal of time lecturing. At times a negative correlation exists between the amount of talking a teacher does in class and the amount of learning that takes place. However, through speech the teacher provides motivation, information about the subject, comments in connection with the use of other media, guidelines for student practice, and information concerning expectations and evaluation procedures. The teacher also provides evaluative feedback following student performance.

In your school and community you will find a number of **resource people** who can help your students achieve one or more of your objectives. Parents might be a starting place. Consider other teachers in your school. Check with the instructional media center, the principal, district supervisors, service clubs, government agencies, and community leaders to locate people who would be of value.

Carefully brief your guests on your objectives and how they can best help your students. Allow time for questions and answers. In some cases, you will want to have your students contact resource people directly. Be flexible. If the visitor doesn't help your students as much as you thought he would, capitalize on the good that did result, then consider additional instructional activities.

Comments by **students** can often be valuable if you guide the discussion and correct erroneous, distracting information. Students can give oral reports, take part in panel discussions, present dramatizations, and record original narration for filmstrips and slidesound sets. Advanced students who have already achieved a sequence of objectives can be used to tutor others who have not.

2. Professionally Produced Records and Tapes



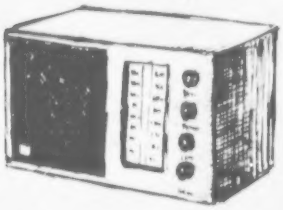
A world of professionally produced records and audio tapes of music, the spoken word, dramatic portrayals, and natural and man-made sound effects is inexpensively available for your use. Your instructional media center and the public library are good places to start looking for recorded records and audio tapes. The downtown record shop might have some useful materials in stock. While there, check the catalogues. Your media specialist will also have directories as well as catalogues listing educational audio materials available from educational materials supply companies.

As with other materials the use of these materials depends on objectives. Play tapes of music, plays, readings, historical events and commentary in class. Point out what students should watch for in their individual use of materials. Allow students to use materials on their own during time set aside for individuals study.

3. Locally produced Audio Materials

Inexpensive instructional programming can be recorded in the school by the teacher, media specialist, or students. See your media resources center for the necessary assistance, equipment and tape. Instructional audio programming could involve you alone, your class, others in your school, or as resource people from your community. You and the resource people could record brief discussions for the entire class or for individuals to play back at their convenience. You could also read verbatim from objective-related materials providing necessary comments of your own. Edit in comments on a musical or dramatic performance to guide student analysis. Develop materials with appropriate sound effects and music. Provide audio materials on cassettes. Provide earphones so a number of students can be using different audio materials at the same time. Allow students to record their own practice materials for repetitive drills. Provide pronunciation models for speech and language instruction.

4. Educational and Commercial Radio Programs



Live or delayed broadcast radio programs are frequently a source of useful material either during or after school. News broadcasts provide up-to-the-minute coverage of current events for group and individual analysis. Some music broadcasts can be used to provide a broad range of musical exposure for your students. Many universities and school districts also broadcast educational programming over their own radio stations. Record important events for later student use.

5. Audio to Accompany Other Media

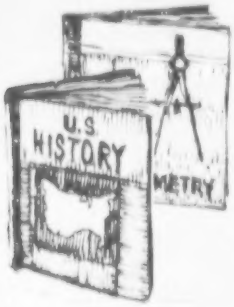
One obvious example in this category is the teacher talking at the same time he is using other media such as the chalkboard, overhead projector, objects, etc. Another example is the use of audio tape recorded narration while viewing a filmstrip, slide set, or studying objects, etc. Both provide a means of adapting other media to the requirements of your objectives and students.

Consider this audio tape example: Student sits down at a study table with a group of objects and a set of still pictures. He listens to a tape on which you compare the objects to the pictures as he works toward an object-naming classification or rule objective. At times he is instructed to turn off tape and solve a problem. After he completes the problem, he turns the recorder back on and listens to your discussion of a possible solution.

In evaluation, short audio dramatizations could be played for analysis, with key points illustrated with still pictures. Voices and sounds produced by musical instruments, animals, etc. could be recorded and played back during a student evaluation session.

E. WRITTEN WORDS AND SYMBOLS

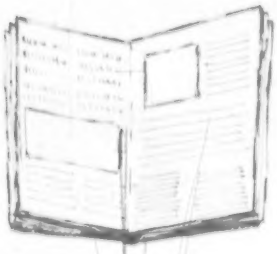
1. Text and Reference Books



Cross-reference specific sections of commercially published texts to your objectives. Indicate those sections that should be skimmed for key ideas. Reconsider having students read all of a text just because it might be "good for them." Obtain a copy of the teachers' guides published in connection with your texts.

Make available a number of supplementary books covering the same material. Chances are that while one text might not have great appeal to some students, the approach another author uses might get through. Cross reference the supplementary books and materials with the objectives. Emphasize (if you mean it) that you aren't concerned about having your students merely read material, but rather, you are concerned about helping them reach the stated objectives. Introduce them to the alternative materials and tell them how to use them.

2. Workbooks



Workbooks provide valuable student response and self-check opportunities. Many workbooks are published to accompany textbooks. Check with publishers of school-adopted texts for companion workbooks or try independent workbook publishers. Teachers can easily prepare their own workbooks to adapt a text and other materials to their objectives and students. Teacher-produced workbooks don't have to be elaborate. Decide which objectives lend themselves to workbook type exercise and written responses. Include objectives and guide students to sources or information needed to achieve them. Also, include information not found elsewhere or needed to clarify other sources. Include exercises of increasing difficulty, all related to the objectives, and provide answers or model solutions. Ask students to hand in completed workbook so you can keep track of difficulties they are having.

3. Periodicals

Magazines and newspapers are a valuable source of current information for reference, analysis, and background material. The public library and the schools' instructional media center are probably the best sources of current newspapers and magazines. Parents are often glad to get rid of back issues. Access to the *Readers' Guide* and other periodical indexes is essential if students are to locate specific types of materials. The teacher and students could start a clipping file of articles and illustrations from periodicals for future use. Students could be challenged to locate a number of examples from periodicals illustrating certain concepts and the application of specific principles in areas such as government, economics, or human affairs.

4. Teacher Prepared Handouts

Handouts are often prepared for specific objectives to present the required information, guide individual study and practice, and inform students of objectives and evaluation procedures. With handouts, additional instruction not found in the text or conveniently located in other sources can be made available to students. Provide information required to motivate and effectively guide the individual practice of your students. Keep extra copies of single sheet handouts and print your own workbook when you are ready. Next time you give a test, run off the number of copies that you need for students, fill in the test yourself on the duplicating master, and run off additional copies. When student hands in his completed test, give him the filled-in test sheet to provide immediate feedback.

5. Printed Materials to Accompany Other Media

Written instructions or information are often needed to accompany the use of some other media. Provide descriptions of objects, pictures, films and audio materials on handouts to precede their use. Check with the instructional media center for copies of booklets and leaflets that were prepared for use with films, filmstrips, records, models and other instructional materials. Develop special handout response sheets to help students structure note-taking during a complex presentation, demonstration, film viewing, or while listening to an audio tape. Hand or machine letter labels for displays and bulletin board. Cover labels with flaps if student is to practice identifying them. He can lift flap to check his response. Talk to your media specialist about lettering guides and duplicating processes available for your use.

Appendix II

INSTRUCTIONAL MEDIA RESOURCES INVENTORY

School _____ Date _____

Department, curricular area or grade _____

Person conducting inventory _____

I. INSTRUCTIONAL MATERIALS

A. OBJECTS

	AVAILABLE	ADDITIONAL NEEDED	PRODUCTION ASSISTANCE AVAILABLE	Materials on hand or needed
1. Single Objects				
2. Collections or Objects				
3. Dioramas				
4. Models				
5. Mock-ups				
6. Globes (world, moon, etc.)				
7. Other _____				
8. Other _____				

B. STILL PICTURES

1. Flat Pictures				
2. Picture Packets				
3. 35mm Slides				
4. 2-¼ x 4 Lantern Slides				
5. Filmstrips				
6. Overhead Transparencies				
7. Maps				
8. Charts and Posters				
9. Bulletin Board Materials				
10. Flannel Board Materials				
11. Other _____				
12. Other _____				

	AVAILABLE	ADDITIONAL NEEDED	PRODUCTION ASSISTANCE AVAILABLE	Materials on hand or needed
C. MOTION PICTURES				
1. Prints of 16mm Films				
2. Prints of 8mm Reel Films				
3. 8mm Film Cartridges				
4. Television Videotapes				
5. Other _____				
D. AUDIO MATERIALS				
1. Disc Recordings				
2. Tape Recordings (reel-to-reel)				
3. Tape Recordings (cassette)				
4. Other _____				
E. PRINTED MATERIALS				
1. Books				
2. Reference Books				
3. Pamphlet File				
4. Newspapers				
5. Magazines				
6. Handouts				
7. Microfilm				
8. Other _____				
F. OTHER MATERIALS				

II. INSTRUCTIONAL MEDIA EQUIPMENT

	NUMBER AVAILABLE	NUMBER ADDITIONAL NEEDED	Comments
A. PROJECTORS			
1. 16mm Sound			
2. 8mm Reel Type (sound)			
3. 8mm Reel Type (silent)			
4. 8mm Cartridge (sound)			
5. 8mm Cartridge (silent)			
6. 35mm Slide			
7. 35mm Slide/Sound			
8. 3¼ x 4 Lantern Slide			
9. Filmstrip			
10. Filmstrip/Sound			
11. Combination Slide and Filmstrip			
12. Lantern Slide			
13. Overhead			
14. Opaque			
15. Other _____			
16. Other _____			
B. AUDIO EQUIPMENT			
1. Record Players (phonographs)			
2. Reel-to-reel Tape Recorders			
3. Cassette Tape Recorders			
4. Radios			
5. Public Address Systems			
6. Extension Speakers			
7. Other _____			
8. Other _____			
C. TELEVISION EQUIPMENT			
1. Television Receivers			
2. Television Cameras			
3. TV Videotape Recorders			
4. _____			
5. _____			

	NUMBER AVAILABLE	NUMBER ADDITIONAL NEEDED	Comments
D. EQUIPMENT FOR LOCAL PRODUCTION			
1. Spirit Duplicator			
2. Mimeograph Duplicator			
3. Offset Reproducer			
4. Thermal Copier			
5.			
6.			
7.			
8.			
E. MISCELLANEOUS			
1. Projection Screens			
2. Projection Stands			
3. Extension Cords			
4. Portable Chalkboards			
5. Portable Easels			
6.			
7.			
8.			

III. RESOURCES FOR DEVELOPING ADDITIONAL MEDIA SKILLS

A. Name of Media Specialist in School _____

B. Location of Media Resources Center in School _____

C. Inservice Media Instruction Available? Yes ____ No ____ Needed ____

D. Professional Media Periodicals Available in School:

1. Audiovisual Instruction
2. Audiovisual Communication Review
3. Educational Screen
4. Educational Technology
5.
6.
7.
8.

E. Books Available on Instructional Media:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

IV. MISCELLANEOUS NOTES AND COMMENTS